THE PHILIPPINE
JOURNAL OF SCIENCE
A. GENERAL SCIENCE

VOL. II OCTOBER, 1907 No. 5

OSTEOLOGICAL AND OTHER NOTES ON SARCOPS CALVUS OF THE PHILIPPINES.

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INTRODUCTION.

About two years ago, Mr. Richard C. McGregor, of the Bureau of Science at Manila, roughed out two skeletons, both of adult females of *Sarcops calvus,* and sent them to me for description. The birds were taken in Mindoro in May, 1905. Shortly after receiving this material, I carefully prepared it for description. Dr. Charles W. Richmond, of the United States National Museum, courteously loaned me two skins from the collection of the Museum. One of these (No. 147229) was from Subic, Zambales, Luzon. The other (No. 190202) was taken at Pantar, Mindanao. These two specimens showed some distinctions in their markings, which if constant would seem to indicate that they were of different species. The gray mantle on the dorsum of the one from Luzon covered nearly the entire back, while in the one collected in Mindanao it was restricted to the region of the back of the neck. Believing that only one form of this bird was known to science, I communicated with Dr. Richmond and in reply received the following statement dated September 12, 1906:

"In a recent number of the Bulletin of the British Ornithologists' Club, Grant has described a second species of *Sarcops,* and I think the Mindanao bird belongs to it, but I can not recollect what name he gave it."

Mr. W. de C. Ravenel, of the United States National Museum, wrote to me on August 17, 1905, as follows:

"Dr. Richmond states that the sexes are alike in this species (*Sarcops*), and the specimens transmitted represent two phases of plumage (at one time thought to represent different species) regardless of sex."

Dr. Richmond also kindly furnished me with the following literature on the subject:

"In reply to your inquiry of the 10th instant I beg to say that plates of *Sarcops calvus* are not very numerous in technical ornithological literature, but you may find some in the popular natural histories. There is a poor, colored plate in Daubenton's Planches Enluminées, No. 200, and a better one (but very small) in Kittlitz's Kupfertafeln der Vögel, Pl. XIII, fig. 2. Brisson Ornithologie, II, Pl. 26, fig. 2, is uncolored and poor.

"The nearest relatives of *Sarcops* are *Basileornis* (from Celebes and Ceram), *Goodfellowia* (from Mount Apo, Mindanao; discovered in 1903), and the Minos (*Gracula vel Eulabes* Mino). *Basileornis* and *Goodfellowia* have graduated tails, like *Sarcops*, and are probably its closest relatives."

These relationships, of course, have been decided entirely upon external characters, as a complete account of the morphology of *Sarcops* has, as yet, never been given.

McGregor, in one of his published papers, lists this species as "*Sarcops calvus* (Linn)," the specimens having been taken at Romblon and Sibuyan, and he states that "a bird killed June 17 had a hard-shelled egg in the oviduct."[1]

I have not, in addition to the notes given above, especially looked into the literature of *Sarcops*, nor has it been deemed necessary to do so, as the present article has to do more particularly with a description of the skeleton of the species.[2]

Additional material, as follows, was received from Mr. McGregor just as I had commenced this paper:

Sarcops calvus, ♀ ad. Toledo, Cebu.
Sarcops melanonotus, ♂ ad. Basilan.
Oriolus chinensis, ♂ Basilan.
Lamprocorax panayensis, ♂ and ♀ ad. Toledo, Cebu.

Mr. McGregor states:

"I can hardly hope to get you *Goodfellowia* as this species is found in Mindanao only. The bones of *Corone* and *Acridotheres* can be had with little trouble and I will try to send them before long."

[1] McGregor, Richard C.: I. Birds from the Islands of Romblon, Sibuyan, and Cresta de Gallo. *Publications of the Bureau of Government Laboratories*, Manila (May, 1905) **25**, 16.

[2] I made a reduced photograph of one of the two skeletons in my possession, the reproduction of which is presented herewith. By comparing the proportions of this with some of the actual measurements given in this paper and taken from the specimen, a correct idea of the size of the birds may be gained.

I thought it possible that Professor J. B. Steere, of Ann Arbor, Michigan, the well-known authority on the birds of the Philippines, might have a skeleton of *Goodfellowia,* so I wrote to him and received the following reply:

"I remember your kindness in looking over my manuscript of the Philippine Birds, but would be glad under any circumstances to aid you in your study of *Sarcops,* if I were able, but I am afraid I can be of little or no use. I never saw Hartert's genus *Goodfellowia.* I had supposed that the range of distribution of *Sarcops* pointed to its origin from Bornean or Celebes ancestors, though the genus is wanting in Palawan which is so closely related to modern Borneo. Though *Sarcops* is not a bird of long flights, it is so well distributed over the eastern and southern Philippines that it must be a form of long standing there, and long separation from its ancestral forms. I had always supposed, with no good reason perhaps, but the ordinary method of arranging the genera near each other in the books, that *Mainatus* or *Eulabes* was more closely allied to *Sarcops* than anything else in the Philippines, though the two genera do not overlap in distribution at all, I believe, *Eulabes* being found only in Palawan in the Philippines, and *Sarcops* being found everywhere else in the Philippines but in Palawan. The habits of the two genera are somewhat alike, as I remember them.

"The Filipinos have a curious story to account for the bald head of *Sarcops.* As near as I can remember it, it runs as follows: 'Once *Sarcops* and the bush cuckoo, *Centropus,* made a bet as to which could fly highest. As they rose above the bushes the sun dazzled the eyes of the cuckoo and he dropped down again into the tall grass, saying *'Tig-sup'* (down I go), while the *Sarcops* kept on up until he struck the roof of heaven and knocked the hair off his head.' The Filipino language has but one word for hair and feathers, and the bush cuckoo still calls, and is called, *Tig-sup* (down I go). I am sorry I can be of no assistance to you."

OSTEOLOGY OF SARCOPS.

Although possessing the general characters of the skeleton as they occur in the *Passeres,* we have no passerine bird in this country with which *Sarcops* could with advantage osteologically be compared—that is, with the expectation of showing near relationships. Were this representative from the Philippines to be thus contrasted with an American species the most interesting genera for the purpose would be such forms as the yellow-headed blackbird (*Xanthocephalus xanthocephalus*), with its allies the red-wings (*Agelaius*), the orioles (*Icterus*), and the grackles (*Quiscalus, Megaquiscalus*), especially the first mentioned. Osteologically, these birds have been described by me in several previous memoirs and papers, and these will be referred to in the course of the present examination. More remotely, or rather superficially, *Sarcops* may osteologically be compared with various species of the several genera *Pica, Cyanocitta, Aphelocoma, Xanthoura, Perisoreus, Corvus, Nucifraga, Cyanocephalus, Sturnus, Sturnella,* and *Euphagus,* skeletons of all of which I have in my private collection.

A casual glance at the skeleton of either *Sarcops calvus* or *S. melanonotus* is sufficient at once to satisfy the osteologist that it possesses all the general characters of a typical representative of the passerine group of birds, with many special ones that bring it very close to the forms in that assemblage more or less nearly related to the corvine type, and that it bears a somewhat similar relationship to *Corvus* or *Pica* as do the icterine genera mentioned above. These characters are immediately to be recognized in the skull, the bones of the pectoral arch, the sternum, and the pelvis—and, when this is the case, it is fair to presume that the vertebral column, the ribs, and the skeleton of the limbs form no exception.

The skulls in *Sarcops calvus* and *S. melanonotus* practically agree in all particulars, and to such a degree that it would be difficult to distinguish one from the other even in a long series of specimens. In making such comparisons the fact must be borne in mind that there may be marked differences in the skulls of different individuals of the same species, a good example of which I long ago pointed out in the case of *Xanthocephalus*.[3]

THE SKULL.

Viewing the skull of *Sarcops calvus* upon its superior aspect, it presents one very characteristic feature. This consists in the deep median furrow extending from the cranio-facial line backwards to be lost on the smooth, globular vault of the cranium in the parietal region. It is deepest between the midsuperior. points of the orbital peripheries, and is due to the swollen condition of the latter, this being caused by the diploic tissue in the frontal bones in this locality. No such state as this is to be found in any of our icterine birds, or in the crows; it is entirely absent in *Oriolus chinensis*, and probably in other orioles. However, in some American forms of this genus, as in *Icterus cucullatus sennetti*, a shallow median depression may occur in the antero-frontal region, but without a thickening of the orbital rims upon either side. It seems quite likely then that this character alone would be sufficient to distinguish the skeleton of *Sarcops* from any of its near allies unless, peradventure, it be present in *Goodfellowia*, a species not yet examined by me osteologically. *Sarcops* has the parietal region of the skull smooth, full, and rounded, indicating a greater cranial capacity than in other icterine species of similar size, as for example, *Oriolus chinensis*. In this particular it approaches the crows and American marsh blackbirds

[3] Shufeldt, R. W.: Individual variation in the skeletons of birds, and other matters. *The Auk*. July, 1887, 4, 265–268. (Letter to the Editor.) The two skulls illustrating this letter have appeared in several of my memoirs; the specimens themselves, however, are no longer in my collection, but were disposed of either to the British Museum or to the College of Surgeons (Lincoln's Inn. Fields), London.

and departs from the orioles, and such a species, too, as the huia bird (*Heterálocha gouldi*) of Australia—a form which Garrod found to be more nearly related to the *Sturnidæ* than to the *Corvidæ*.[4]

Passing to the lateral aspect of the skull, it is to be noted that *Sarcops* possesses the large, elliptical narial aperture found in the *Corvidæ*, the orioles, *Sturnella, Lamprocorax*, the American marsh blackbirds, and related genera and species. There is no osseous narial septum present, and in the material at hand I find such a bony partition developed only in *Oriolus chinensis* and *Corvus*,—to a slight degree, superiorly in the former, and anteriorly in the latter, as in the raven (*Corvus corax sinuatus*).[5]

In form, the superior mandible of *Sarcops* is rather broad at its base; the culmen rounded, tomia cultrate; the whole being gently decurved throughout and gradually carried to an acute apex anteriorly. (See Pl. I.)

More closely approaching the orioles in its general contour, it lacks entirely that peculiar median elevation of the culmen, between the nasals, so prominent in the skull of *Sturnella*, and generally in *Xanthocephalus, Agelaius* and their nearest relatives,[6] as well as in the several species of *Euphagus, Quiscalus, Megaquiscalus*, and somes finches most nearly related to them. The bone which I described as the lacrymal in *Sturnella* is also present in *Sarcops*, where it is represented by a small, triangular ossicle wedged in between the corresponding nasal and the pars plana, coming barely in contact with the frontal. Its descending spiral process may or may not ossify, but when it does, it supports, or gives attachment to, the thin membrane which anteriorly is attached to the maxillary below, and the free posterior margin of the nasal, anteriorly. Minute, insular ossifications may occur in this membrane, as I have found to be the case in *Sarcops melanonotus*. Indeed, the bone I take to be the lacrymal, in *Oriolus chinensis*, is very small, and it occupies a lower position between the pars plana and nasal, apparently not being in contact with the frontal at all, although it may articulate with its nasal process, beneath the overlapping nasal, and the relationship thus

[4] Garrod, A. H.: Notes on the anatomy of the huia bird (*Heteralocha gouldi*) Proc. Zool. Soc. (1872), 643–647. Judging from the figures and description of the skull of this species, as given us by Garrod, *Sarcops* and it are by no means closely allied.

[5] Shufeldt, R. W.: The myology of the raven, p. 7, fig. 1. In some skulls of the common American crow at hand it is entirely absent, as it is also in *Pica*.

[6] Shufeldt, R. W.: On the skeleton of the genus *Sturnella*, with osteological notes upon other North American *Icteridæ*, and the *Corvidæ*. *Jour. of Anat. and Phys.* (1888), **22**, n. s., **2**, 311, Pl. XV, fig. 1. The form of the superior osseous mandible is far more like that which we find in *Pica*, it does not so much resemble that in *Sturnella* or the marsh blackbirds. In *Oriolus chinensis* there is a slight indication of this prominence of the culmen in the internasal region.

be concealed from view. This can only be proved by an examination of the nestling, before interossification of the bones involved has commenced. In fact, at this stage of development, in any of the species above mentioned, we may possibly discover that the ossicle I have considered to be the lacrymal is nothing more than an ossification in the upper angle of the triangular membrane stretched over the opening existing in the dried skull, between the pars plana, nasal, and maxillary, and that the true lacrymal in the adult is indistinguishably fused with the upper part of the pars plana. Such a discovery would not surprise me, but until such is shown to be the case, I must believe the above description to be the correct one.

As in *Oriolus* and in the majority of the other species herein mentioned, the ethmoidal wing or pars plana in *Sarcops* in remarkably well developed. Apart from the two small foraminal perforations in it, it constitutes a complete, and rather thick, bony wall between the orbit and the rhinal cavity beyond it, being concave posteriorly and convex for its anterior surface, with a decided rounded notch at the middle of its external border—as in *Oriolus*, *Lamprocorax*, and others. This osseous partition is less complete in *Sturnella* and some of the crows. *Sarcops* possesses a capacious, hemispherical orbit, with quite a large vacuity in the interorbital septum, with the openings into the brain cavity much enlarged above, though the foramen rotundum remains distinct, though not as decidedly so as in *Cyanocephalus* and among the American jays.

As in *Oriolus chinensis,* the postorbital processes at the lateral aspect of the cranium are fairly well developed and bluntly pointed, the valley between them being narrow, rather deep and, extending backward as the crotophyte fossa, it is confined entirely to the lateral aspect of the skull. The conformation here agrees with the orioles rather than with the starlings and their near allies (*Sturnella,* etc.). The "infraorbital bar," composed of the usual bones, is extremely slender, hardly curved at all, and from quadrate to ethmoid, nearly of uniform size.

At the base of the skull all the bones and their articulations and relationships present the usual passerine characters, departing therefrom only in certain specific variations. Antero-posteriorly, the basitemporal region is short, and the sphenoidal rostrum sharply keeled beneath. The condyle is quite minute, while the subcircular foramen magnum is comparatively large. Nothing of special importance characterizes either the quadrates or the pterygoids. The body of a palatine is notably short antero-posteriorly, with the process at its postero-external angle conspicuous, though blunt, as in most orioles. Its prepalatine portion is very slender and widely separated from the fellow of the opposite side. In the intervening space is seen the large keeled and bifurcated vomer, which unites with the palatines posteriorly. A maxillo-palatine is an extremely delicate structure, with a slightly clubbed free posterior extremity. On either side, this very fragile little element curves backward in the space

existing between the vomer and the prepalatine. There is no osseous floor to the rhinal chamber in front of the vomer—a partition that partly ossifies in *Oriolus*, but not in *Sturnella*.

At the posterior aspect of the cranium the occipital area is extensive and well defined, while the bounding crest is nowhere raised as it is in the American marsh blackbirds and the genus *Sturnella*—and in these latter forms, too, the occipital area comparatively is not so extensive. All this part of the skull in *Sarcops* is more as we find it in *Oriolus* and *Icterus*.

Concerning the mandible there is not much to be said, for it has the usual V-pattern of the various genera mentioned above, with a moderately deep symphysis and flat sides. As a whole the anterior moiety is bent gently downward, and an elliptical vacuity is to be found at its usual site in either ramus. Posteriorly, the articular ends are truncated, with an indication of a process above, each having the usual intumed one with the minute pneumatic foramen near the extremity. The inferior ramal margins are rounded, while superiorly beyond the symphysis they are cultrate. Upon either side, between the articular extremity and the corresponding quadrate a sesamoid is to be found. It occurs in the lateral ligament of the jaw, and is very likely to be overlooked in cleaning skulls of this species for study.

The sclerotal plates of either eye are small and of about the usual number. They present nothing peculiar beyond what we find in any ordinary passerine bird. This also holds true for the bones of the hyoid, for they possess the usual characters, although we must note that the uro-hyal has a spatulate distal extremity, present also in *Oriolus chinensis*. In the articulated skeleton, the inferior aspect of the ossified larynx rests upon this expanded portion of the mesial element of the hyoid.

REMAINDER OF THE AXIAL SKELETON.

Sarcops possesses an unusual number of vertebræ in its spinal column as compared with the other genera of birds named above. I find it to agree with the crows and jays, and such genera as *Molothrus* and *Calamospiza* in having 19 free vertebræ between the skull and the pelvis. All of the orioles (*Icteridæ*) and the marsh blackbirds which I have examined possess only 18. *Sarcops* has 11 vertebræ in its pelvic sacrum, that is that portion of the spine coössified with the ilia of the pelvis. In this count it agrees with most crows and jays found in the United States avifauna, orioles and marsh blackbirds (*Agelaius*, etc.) having but 10, as is also the case with *Euphagus* and *Sturnella*.

Finally, *Sarcops* has 7 free caudal vertebræ in addition to a large pygostyle. Only 6 tail vertebræ occur in the orioles, and other genera just named. In all these birds they appear to be nonpneumatic, and this also appears to be the case with the several vertebræ, while those of the

neck and back are always pneumatic. *Sarcops* has a very rudimentary pair of free ribs on its thirteenth cervical vertebra, and a much longer free pair on the fourteenth; these latter, however, never have costal ribs or unciform appendages.

There are then 37 vertebræ and the pygostyle in the spinal column of *Sarcops;* the five dorsal ones bearing the dorsal ribs possess, as do all the others of the chain, the usual passerine characters. These ribs all support well-developed unciform appendages, and connect with the sternum by the intervention of a graduated series of costal ribs. The leading vertebra of the pelvis also has a pair of long, slender, free ribs, but this pair lacks the epipleural appendages, and its costal hæmapophyses, although long, fail to connect with the sternum. In the dorsal vertebræ the neural spines mutually interlock with each other, in front and behind, along their superior borders, while the anterior and posterior margins of these spines are concave and so do not come in contact with each other. The atlas vertebra has its articular cup perforated at its base, and the odontoid process of the axis vertebra is conspicuous. We note that in the case of the first six caudal vertebræ the transverse processes are very nearly of a uniform length, with pointed outer extremities. They are bent slightly downward, and their neural spines are about equally well developed. Only the fifth, sixth, and seventh caudals have hæmal spines, they being bifurcated in the last two—single, and hooked forward in the first. The seventh caudal vertebra is more or less rudimentary, more especially in regard to its lateral processes rather than its spines, in fact its bifurcated hæmal spine is the largest of the series.

Sarcops has a typically passerine sternum, and scarcely departs at all in its characters from the sterna of other birds more or less nearly related to it. *Oriolus chinensis,* for example, has a sternum almost identically like the bone as we find it in *Sarcops;* moreover, the sterna agree in the adult in the matter of length, to the fraction of a millimeter, the measurements being taken from the base of the bifurcation of the manubrium in front to the middle point of the xiphoidal border behind. The manubrial process is somewhat larger in *Sarcops* than it is in *O. chinensis,* otherwise they are identical and the sternum of *Sarcops* is so thoroughly passerine that it requires no special description. *Lamprocorax* forms no exception to this statement. As we know, even in the crows (*Pica, Corvus,* etc.) the sternum is practically the same in character—here, however, we meet with the pneumatic foramen mesially, in the coracoidal groove, posterior to the base of the manubrium, not found in *Sarcops* and others, wherein, nevertheless, the sternum is pneumatic.

Passing to the pelvis it is very obvious at a glance that in all particulars it, too, is typically passerine in each and all of its characteristics; so that what has just been said above in reference to the sternum is equally applicable to the pelvis. If we compare character with character as found in the pelvis of *Sarcops* with the corresponding ones in the

pelvis of *Oriolus chinensis,* it is at once evident that the two bones are, morphologically, almost identical. As compared with its length, the width of the pelvis in *Sarcops calvus* is the mere fraction of a millimeter wider than is the case in *O. chinensis.* The same characters also obtain in any of our American orioles, such as *Icterus icterus, I. c. sennetti, Icterus spurius, I. galbala, I. bullocki,* and others with which I have compared it in this and other particulars. Even as we pass to *Euphagus,* the pelvis is of the same general pattern, which is likewise true of this bone in its near allies. In *Sturnella,* the mesial borders of the ilia in the dorso-preacetabular region of the pelvis usually meet the superior border of the sacral crista, a condition I have never met with in any of the other passerine birds named above.[7] It hardly seems necessary here to enter further into details of this bone, as I have so frequently figured and fully described the pelvis of corvine, sturnine, icterine, and related forms of birds, in other papers which have appeared during the past twenty-five years. It has already been pointed out above that there is one less vertebra included in the pelvis of *Oriolus* than there is in that of *Sarcops,* but this difference is only apparent after actual count, and in no way affects the general appearance of similarity in the bone in the two genera.

Coming to the bones of the pectoral arch or the shoulder girdle we find these, too, to be typically passerine in all their characters, and, moreover, remarkably alike in *Sarcops* and *Oriolus.* Essentially, too, they are the same in *Lamprocorax.* We meet with the usual U-shaped os furcula with its conspicuous, oblong hypocleidium extending backward but not coming in contact with the anterior margin of the carina of the sternum in the articulated skeleton. The clavicular limbs are slender, with the usual, expanded, free heads for articulation with the scapula and coracoid upon either side. These last two possess the usual passerine form, and articulate with each other and the furcula, exactly as they do in the *Icteridæ* and related genera.

At the shoulder joint in *Sarcops* and *Oriolus,* and probably in all the other genera mentioned, there is a free, peg-like os humero-scapulare of some considerable size.

SKELETON OF THE LIMBS.

There would be but little to be derived from a detailed description of the bones of the pectoral and pelvic limbs of *Sarcops,* for when it is said that they are typically passerine in all their essential characters, the comparative osteologist at once appreciates what they are like, morphologically. As compared with *Oriolus chinensis* the long bones of the arm or wing are both relatively as well as actually shorter in *Sarcops calvus*

[7] See fig. 7 of my memoir "On the skeleton of the genus *Sturnella,* etc. *Loc. cit.*

than they are in that species, the reverse being the case in regard to the bones of the leg. For example, in both of these birds the keel of the sternum has an extreme length of 3.4 centimeters while the proportionate length of some of the long bones is as follows:

	Humerus.	Ulna.	Femur.	Tibio tarsus.	Metatarsus.
	Cm.	*Cm.*	*Cm.*	*Cm.*	*Cm.*
Sarcops calvus	3.2	4	3.3	5.1	3.2
Oriolus chinensis	3.5	4.6	3	4.5	2.7

In *Sarcops* the humerus is highly pneumatic, and the ulna, to a degree, probably so. I am also inclined to believe that the femur and the proximal four-fifths of the tibio-tarsus is likewise so, while the other bones are not—certainly not the metatarsus and the bones of manus and pes.

The humerus has a straight shaft and short, radial crest. The pneumatic fossa is deep; completely surrounded by a raised rim, while the pneumatic foramen at the base is large, single, and leads directly into the hollow shaft. Both *Oriolus* and *Sarcops* have a fair sized free sesamoid at the elbow, an ossicle that is probably present in other species named above. In *Sarcops* the papillæ that usually are found down the shaft of the ulna are practically absent, while they are quite conspicuous in *Oriolus*. The bones of the carpus and pinion present nothing peculiar in either species.

The shaft of the femur is slightly bowed to the front in *Sarcops* and straight in *Oriolus,* while both possess a well-developed patella. Below the thigh bone the shafts of the tibio-tarsus and metatarsus are quite straight, especially in *Sarcops,* and the fibula extends only for a short distance below the articular ridge on the side of the shaft of the former. This ridge is more elevated in *Sarcops* than in *Oriolus,* thus causing the leg bones to stand farther apart in the former species.

Osteologically, the metatarsus and the pedal digits are normally passerine, and offer no salient characters by means of which they may be distinguished from the corresponding bones of the nearest allies of *Sarcops*—that is, beyond the matter of proportional size and lengths. The osseous claw or ungual phalanx of the hallux is very large in *Sarcops,* while the shaft of the proximal joint of this toe is comparatively slender. Beyond these few characters, there is nothing worthy of record, other than we would expect to find in the normal foot of a passerine bird of this size.[8]

[8] Forbes, W. A.: On the variations from the normal structure of the foot in birds. *Ibis.* (1882), **6,** 386–390, fig. 1.

Comparing them character for character in all of their minor details, the bones of the limbs in *Sarcops* stand in better agreement with the corresponding ones in *Lamprocorax* than they do with those of *Oriolus*, and especially in the matter of those characters I have noticed above.

Further account of the osteology of the limbs of certain passerine birds more or less related to *Sarcops* are presented in my paper on the skeleton of *Sturnella*, cited above, and these may be compared by any one desiring such information, although this can only be considered of any taxonomic value whatever, when taken in connection with the characters presented on the part of the skulls and trunk skeletons of the various species considered.

CONCLUSIONS.

Judging from the osteological characters of the material upon which the present examination is based it is clear that the representatives of the genus *Sarcops* are strictly passerine forms. In them the skull is very distinctive, and in a few particulars quite unlike any of the typical *Icteridæ*. This does not apply to the remainder of the skeleton. Unfortunately, *Goodfellowia* has not been compared osteologically in the present connection, but it may be said that in cranial characters *Lamprocorax panayensis* comes much nearer *Oriolus chinensis* than *Sarcops* approaches either of them. In fact, the skull in the latter is not particularly icterine in character, while in the morphology of the bones of its face it stands nearer the orioles than it does to species as the American marsh blackbirds, such as *Xanthocephalus* and its allies, although in other characters it approaches them.

It will require further examinations and comparisons with other related birds of the Philippine avifauna, and especially *Goodfellowia*, before a more definite opinion can be given as to the exact relationships of the species now included in this genus.

ILLUSTRATION.

PLATE I. Left lateral view of the skeleton of *Sarcops calvus*, adult ♀. Reduced about one-fourth. Hyoid arches removed, as well as the sclerotal plates of the eyes. Collected by Richard C. McGregor in Mindoro, May, 1905. From a photograph made by the author.

From a photograph by the author.

PLATE I. LEFT LATERAL VIEW OF THE SKELETON OF SARCOPS CALVUS. (ADULT ♀, REDUCED ABOUT ONE-FOURTH.)

ON A NESTING SPECIMEN OF CAPRIMULGUS GRISEATUS WALDEN.

By Dean C. Worcester.
(*From the office of the Secretary of the Interior.*)

On May 29, 1907, as I was riding over a piece of stony ground sparsely covered with vegetation, my horse stepped within six inches of a goatsucker (*Caprimulgus griseatus* Wald.) which was sitting on two eggs. The bird fluttered a scant two feet from her nest and lay quiet on the ground with her wings fully extended. After riding on for a short distance, I dismounted and returned to the nest. The bird allowed me to approach within five or six feet of her, and then attempted to toll me away by fluttering along the ground. After I had followed her for some distance she began to make short flights, doubling so quickly as she alighted that the eye could hardly follow her. Her color blended perfectly with the sand, gravel and stones about her so that in several instances, having looked away from her, I was quite unable to see her again until I walked up near enough to flush her.

On the following day I returned with a camera and took the photographs here reproduced.

The first (Pl. I, fig. 1) was taken at a distance of approximately ten feet; the second (Pl. I, fig. 2) at about five feet; the third (Pl. II, fig. 1) at thirty inches.

The bird at first was asleep, but while the camera was being set up for the third photograph with the lens close to her, she occasionally opened her eyes and was evidently depending upon her color to protect her.

Having secured the three photographs above mentioned, I endeavored to take a fourth from above, with the tripod directly over the nest. I succeeded in focusing without disturbing the bird; but the sunlight was intense and the flirting of the black cloth with which I was protecting the plateholder as I was about to insert the latter in the camera, caused her to take flight.

As on the previous day, she flew but a few feet at a time, at first alighting with wings outstretched and resting on the ground. As I followed her away from the nest, she increased the length of her flights, and again began to alight with a very swift doubling movement which rendered it most difficult for the eye to follow her.

After she had left her eggs I photographed them from above (Pl. II, fig. 2). They were two in number, and in color were dirty white with a few faint, purplish lines and blotches. They were in an advanced state of incubation. Scattered about near them were several small and perfectly white stones, which had evidently been brought from some distance by the parent birds, as no similar ones could be found in the vicinity. These stones served the purpose of rendering the eggs less conspicuous when uncovered, but whether they were brought with this end in view or for purposes of ornamentation, it is of course not easy to say.

ILLUSTRATIONS.

PLATE I.

FIG. 1. *Caprimulgus griseatus* on its nest; taken at a distance of ten feet.
2. The same at five feet.

PLATE II.

FIG. 1. The same at thirty inches.
2. The eggs of *C. griseatus* in situ; taken with the camera directly over the nest.

FIG. 1.

FIG. 2.

PLATE I.

FIG. 3.

FIG. 4

PLATE II.

ON A NESTING PLACE OF SULA SULA (LINNÆUS) AND STERNA ANÆSTHETA SCOPOLI.

By Dean C. Worcester.

On Saturday, June 15, 1907, when on a trip of inspection to the Babuyanes and Batanes Islands in company with the Governor-General, our party sailed from Port San Pio on the Island of Camiguin in a general northwesterly direction in order to observe a volcano said to exist in the immediate vicinity of the Didikas rocks.

We found that this volcano, which rose from the sea in 1859 and gradually increased in size until it attained a height of 700 feet, had completely disappeared.

The Didikas rocks consist of three separate masses, two of which rise to a height of about 150 feet each and are quite sharply pointed, while the third mass is longer, lower, and runs up to a narrow crest (Pl. I). There were signs of recent volcanic activity on the western side of this lower mass of rock; and as the sea was perfectly calm at the time, we attempted to land in order to make a closer examination. As our boat approached the rocks large numbers of boobies [*Sula sula* (Linn.)] and terns (*Sterna anæstheta* Scop.) flew out to meet us and hovered about our boat in evident curiosity. They were little disturbed by the shots that ended the earthly careers of several of their number, and continued to follow us about as long as we remained in the immediate vicinity of the rocks.

The two higher pointed rocks were covered with the excrement of the boobies, and as a number of terns were seen issuing from holes in the volcanic conglomerate which made up a part of the third rock, it seems probable that both species use these rocks as a nesting place.

The Didikas rocks lie fairly in the main typhoon track and are swept by fierce winds and strong currents. There is no more isolated and inaccessible breeding ground for water-birds in the Philippine Islands. Even with the sea apparently perfectly calm, it proved impossible to land, as the almost imperceptible swell was breaking so heavily at the base of the rocks that there would have been serious danger of destroying our boat had we attempted to do so.

ILLUSTRATION.

PLATE I. View of Didikas rocks.

PLATE I.

NOTES ON A COLLECTION OF BIRDS FROM THE ISLAND OF BASILAN WITH DESCRIPTIONS OF THREE NEW SPECIES.

By Richard C. McGregor.

(*From the zoölogical section, Biological Laboratory, Bureau of Science.*)

The Island of Basilan is about 8 miles south of the long peninsula of Mindanao on which Zamboanga is situated. It is separated from Mindanao by shallow water and there are several small islands in the channel. Basilan is well wooded and its surface is broken, but there are no high mountains. The small island of Malamaui is separated from Basilan by so narrow a channel that I have not thought it worth while to consider the two islands as distinct localities.

Steere visited Basilan in 1874 and obtained 23 species of birds, 14 of which were described by Sharpe. Everett spent a short time there in 1878 and added 48 species to the list. The Steere Expedition in November, 1887, obtained specimens of 8 species which were described as new by Steere. In 1890 the Menage Expedition made a large collection in Basilan, adding 15 species to the list of those already known from the island; one of these was new to science. The species known from Basilan as given in McGregor and Worcester's Hand-List amount to 122, but one of these (*Callisitta œnochlamys*) is not found in the island, so that 121 is believed to be the correct number.

Collectors from the Bureau of Science worked near Isabela, Basilan, from December 14, 1906, to March 19, 1907, and the specimens obtained by them furnish the material for this paper. I am now able to add 29 species to the list of Basilan birds, one of which appears to be new to science. At the same time I have described, as new, two species which have previously been united with their relatives found in Mindanao.

LIST OF SPECIES NOT PREVIOUSLY RECORDED FROM BASILAN.

Excalfactoria lineata.
Rallina euryzonoides.
Gallinula chloropus.
Charadrius fulvus.
Ochthodromus mongolus.
Ægialitis dubia.
Ægialitis peroni.
Himantopus leucocephalus.
Totanus eurhinus.
Heteractitis brevipes.

LIST OF SPECIES NOT PREVIOUSLY RECORDED FROM BASILAN.—Cont'd.

Rhyacophilus glareola.
Limonites damacensis.
Dissöura episcopus.
Ardea sumatrana.
Egretta garzetta.
Bubulcus coromandus.
Dendrocygna guttulata.
Mareca penelope.
Astur, sp.
Astur soloensis.
Cuculus canorus.
Chalcococcyx xanthorhynchus.
Chalcococcyx malayanus.
Pitta fastosa, new species.
Hemichelidon griseisticta.
Pericrocotus cinereus.
Locustella ochotensis.
Acanthopneuste borealis.
Budytes leucostriatus.

LIST OF NEW SPECIES.

Thriponax multilunatus.
Pitta fastosa.
Orthotomus mearnsi.

TITLES OF PRINCIPAL PAPERS ON THE BIRDS OF BASILAN.

Bourns and Worcester, Preliminary notes on the birds and mammals collected by the Menage Scientific Expedition to the Philippine Islands. *Minn. Acad. Nat. Sci., Occ. Papers* (1894), **1**, 1–64.

McGregor and Worcester, A hand-list of the birds of the Philippine Islands. *Publications of the Bureau of Government Laboratories* (1906), **36**, 1–123.

Sharpe, Prof. Steere's Expedition to the Philippines. *Nature* (1876), **14**, 297–98.

Sharpe, On the birds collected by Professor J. B. Steere in the Philippine Archipelago. *Trans. Linn. Soc. Zool.* (1877), **1**, 307–355, pls. 46–54.

Steere, A list of the birds and mammals collected by the Steere Expedition to the Philippines. Ann Arbor (July 14, 1890) 1–30.

Tweddale, On the collection made by Mr. A. H. Everett in the Island of Basilan. *Proc. Zool. Soc.* (1879), 68–73.

Worcester, Notes on the distribution of Philippine birds. *Proc. U. S. Nat. Mus.* Wash. (1898), **20**, 567–625, pls. 55–61.

Worcester and Bourns, A list of the birds known to inhabit the Philippine and Palawan Islands, showing their distribution within the limits of the two groups. *Proc. U. S. Nat. Mus.* Wash. (1898), **20**, 549–566.

NOTES ON THE SPECIES OBSERVED.

Megapodius cumingi Dillw.

This megapode appeared to be rare in Basilan; a live specimen was seen which had been taken in a snare.

Excalfactoria lineata (Scop.).

A male was taken February 6; the species is not common in Basilan and so far has been unrecorded from the island.

Gallus gallus (Linn.).

The jungle fowl was rather abundant in thick second growth on Malamaui and several individuals were killed.

Osmotreron axillaris (Bp.).

A female was taken March 13.

Osmotreron vernans (Linn.).

This species like the last was not common; a female was taken in December.

Phapitreron brunneiceps Bourns & Worcester.

This species is very distinct from *P. amethystina*, being smaller and differently colored. A male taken February 28 yields the following measurements: Length, 10.5 inches; wing, 5.32; tail, 3.94; culmen from base, 0.98.

Phapitreron occipitalis Salvad.

Fairly abundant; bill and bare skin about eyes, black; irides light-purple; feet deep rose; nails gray. This species is well separated from *P. leucotis* by its lighter chin and malar region and by its much shorter wing; it seems to be very near *P. brevirostris* but it has more metallic color on head and neck than the latter species.

Leucotreron occipitalis Bp.

A male in adult plumage has albinistic feathers in mantle, back, tail, and wings.

Spilotreron bangueyensis (A. B. Meyer).

This handsome little dove was abundant and specimens collected were very fat. It was found feeding on the fruit of small, second growth trees and shrubs.

Muscadivora ænea (Linn.).

Several specimens killed.

Zonophaps poliocephala (Hartl.).

This large zone-tailed pigeon is represented by a female taken March 15.

Macropygia tenuirostris Bp.

The slender-billed cuckoo-dove is represented by a female taken in December.

Streptopelia dussumieri (Temm.).

Not common.

Chalcophaps indica (Linn.).

A female was taken in January.

Phlogœnas crinigera (Jacq. & Pucher.).

But three specimens of this species obtained. Length, 10.8 to 11.5 inches; bill, black; irides dark-blue; legs and feet flesh; scales dark carmine; nails white.

Rallina euryzonoides (Lafr.).

A male of this rail, which has not been recorded from Basilan, was taken February 22.

Poliolimnas cinereus (Vieill.).

An immature male was taken December 26.

Amaurornis phœnicura (Forster).

A pair taken December 21.

Gallinula chloropus (Linn.).

A female was taken December 29 and several other individuals were seen; the species has not been previously noted from Basilan.

Charadrius fulvus (Gm.).

Two specimens were preserved and others were seen during December; the species has not been recorded from Basilan.

Ochthodromus mongolus (Pallas).

A female plover, taken December 20, is of this species which is new to the Basilan list.

Ægialitis dubia (Scop.).

A male specimen of this small plover was taken January 3 and the species is new to the Basilan list.

Ægialitis peroni (Bp.).

A female was taken December 16; like the last this species has not been recorded from Basilan.

Himantopus leucocephalus Gould.

A solitary bird, which I have no hesitation in referring to the above species, was repeatedly seen on Malamaui; this species has been recorded from Mindanao and so far from no other island in the Philippines.

Totanus eurhinus (Oberh.).

A female of this species was taken December 29; the species has not been recorded from Basilan.

Heteractitis brevipes (Vieill.).

A female was taken December 12; this species appears not to have been recorded from Basilan.

Rhyacophilus glareola (Gm.).

This species, which was fairly common, seems to be unrecorded from Basilan; specimens were obtained in December.

Limonites demacensis (Horsf.).

Small flocks of stints were found about old, flooded rice-fields on Malamaui; a male and two females taken December 26 are of this species, which is an addition to the Basilan list.

Gallinago megala Swinhoe.

Snipe were abundant about the duck pond on Malamaui and the only specimens killed were of the above species.

Dissöura episcopus (Bodd.).

This stork was seen in flight and resting in small trees near the town of Isabela; the species has not been noted as an inhabitant of Basilan.

Ardea sumatrana Raffl.

A female was taken December 18. One, of two fish extracted from its gullet measured 3.5 inches in depth. This species of heron is an addition to the Basilan list.

Egretta garzetta (Linn.).

A male taken December 20 measured 24 inches in length; legs, blackish with blotches of green on upper parts; feet and lower part of tarsi, green; bill, black, except basal half of lower mandible which was white. This is the first record of the species from Basilan.

Butorides javanica (Horsf.).
Common in mangrove swamps.

Bubulcus coromandus (Bodd.).
A few small flocks observed and a female taken in December. This species is new to the Basilan list.

Ardetta cinnamomea (Gm.).
Fairly abundant; an immature female was taken December 29.

Dendrocygna arcuata (Horsf.).
A few ducks, for the most part of this species, were observed on a small pond in Malamaui.

Dendrocygna guttulata Wallace.
A male of this species was found in a string of *D. arcuata* killed December 26; the species has not been previously noted in this locality.

Mareca penelope (Linn.).
A female widgeon in very poor plumage was taken January 5. The only previous Philippine record is based on a specimen killed by me in Calayan.

Fregata species.
On January 17 a small flock of frigate pelicans was seen near Basilan.

Astur species.
A female taken January 24 is provisionally identified as *Astur trivirgatus.*

Astur soloensis (Lath.).
Specimens were obtained in January, February, and March.

Spilornis holospilus (Vig.).
Two specimens taken.

Butastur indicus (Gm.).
A female taken January 31.

Haliaëtus leucogaster (Gm.).
Occasionally seen.

Haliastur intermedius Gurney.
A few seen.

Ninox japonica (Temm. & Schl.).
A male and a female taken in Basilan, February 27, are darker than specimens from Cuyo and Calayan. The following notes indicate the variations in specimens at hand.

Basilan, February, male and female; six dark tail-bands, first and second primaries with no light bands, third and fourth slightly banded.

Cuyo, March, male; four tail-bands, all primaries strongly banded.

Fuga, August, two males; five tail-bands, all primaries banded.

Calayan, November, male; five tail-bands, and primaries strongly banded; December, male and November, female; five tail-bands, first primary with indications of light bands.

Hondo, Japan; five tail-bands, all primaries weakly spotted.

Ninox spilocephala Tweed.
Five specimens were taken in February and March. This species is very much like *Ninox philippensis* but is easily recognized by its spotted head.

Cacatua hæmaturopygia (P. L. S. Müller).
Abundant.

Prioniturus discurus (Vieill.).
Abundant; feeding on bananas.

Tanygnathus lucionensis (Linn.).
Abundant.

Loriculus apicalis Souancé.
Fairly abundant.

Batrachostomus septimus Tweed.
A pair of frog-mouths taken March 1 are in perfect rufous plumage. These specimens agree fairly well with the description of the above species.

Eurystomus orientalis (Linn.).
The oriental roller was seen in its usual numbers.

Pelargopsis gigantea Walden.
A female taken December 20.

Alcedo bengalensis Briss.
Abundant.

Ceyx mindanensis Steere.
A number of specimens of this species taken in February and March.

Ceyx bournsi Steere.
Several specimens taken.

Halcyon winchelli Sharpe.
Fairly abundant.

Halcyon chloris (Bodd.).
Abundant.

Hydrocorax mindanensis (Tweed.).
Several specimens secured.

Penelopides basilanica Steere.
Abundant.

Merops philippinus Linn.
Two males collected.

Lyncornis macrotis (Vig.).
A male from Basilan can be almost exactly matched by birds from Luzon and Mindoro. This species seems to be somewhat dichromatic and in the series of fifteen specimens before me the dark, brown-headed form is the commoner. The variation from this is most strongly marked in a female from Lamao, Bataan Province, Luzon, collected January 3, 1905. The forehead and top of head are light rusty-fulvous with fine, blackish vermiculations and the black spots on vertex are much reduced in size; the jaws, sides of face, ear-coverts and supercilia are rufous with black cross-lines; in the commoner type these parts are black with narrow rufous cross-lines. The same general condition extends to the wings and coverts, namely an increase of rufous at the expense of the black. The light areas of the scapulars which are normally white or nearly white, are fulvous in the rufous phase. The light tail-bars are more pronounced and are nearly entire across the webs, instead of being greatly broken. The under surface of the body is similar to that of the normal type except the fore-breast which is more strongly vermiculated with rufous.

Macropteryx major Hartert.
Two specimens secured.

Chætura species.

A large swift, presumedly *C. celebensis*, was frequently seen.

Pyrotrogon ardens (Temm.).

Specimens from Basilan have much larger bills than specimens from Luzon but the colors are exactly similar.

Surniculus velutinus Sharpe.

Three males obtained in January and February.

Cuculus canorus Linn.

A male in good plumage was killed December 27; this species is new to the Basilan list.

Cacomantis merulinus (Scop.).

Fairly abundant.

Chalcococcyx xanthorhynchus (Horsf.).

An adult male was taken January 9; both this and the following species are unrecorded from Basilan.

Chalcococcyx malayanus (Raffl.).

An immature male was taken December 26; length 6.5 inches; irides and eyelids, red; bill and feet, black. A female taken December 31 has throat, breast, and sides of neck heavily washed with rusty-brown; length 6.3 inches; irides, red; bill, black; base of bill, dark red; feet, dark green.

Eudynamis mindanensis (Linn.).

A male taken March 18.

Centropus viridis (Scop.).

A few seen.

Centropus melanops Less.

The black-eyed cuckoo occurs in some abundance in Basilan; there is considerable variation in the size of bill in this species, but it is purely individual. Birds from Basilan and Bohol do not differ in coloration.

Thriponax multilunatus sp. nov.

Specific characters.—Similar to *Thriponax javensis* but the white lines on throat wider and feathers of fore-breast narrowly edged with pale-fawn or buffy-white, forming crescentic marks, this approaching *T. pectoralis*.

Type.—No. 6171, ♂, Bureau of Science Collection; Isabela, Island of Basilan, P. I., December 28, 1906; R. C. McGregor and A. Celestino.

Description of type.—Forehead, crown, crest, and malar stripe bright-crimson, the feathers withish at base; nasal plumes, blackish; lores and a wide transocular band black; rest of upper parts, wings, and tail, black; second, third, and fourth primaries with a white spot at base of inner web; third to seventh primaries with a white spot at tip of outer web; inner secondaries white at base; chin, throat, and postauricular area, black, each feather narrowly margined with whitish, producing a striped appearance; breast, black, the feathers of fore part narrowly bordered with buffy producing a series of crescentic light marks; abdomen and sides, buffy white; thighs black, each feather widely bordered with light buff; vent and tail-coverts, black. Length in flesh, 16.5 inches; wing, 8.25; tail, 6.55; culmen from base, 2.05; tarsus, 1.16.

Ten specimens from Basilan differ uniformly from *Thriponax javensis* and maintain the specific characters assigned above. That the crescentic breast marks are not due to immaturity is evident from an examination of young specimens of *T. javensis* from Luzon for these have the breast entirely black.

Yungipicus fulvifasciatus Hargitt.

This small woodpecker is a common species in Basilan.

Chrysocolaptes lucidus (Scop.).

Abundant.

Sarcophanops steerei Sharpe.

A large series of this curious species was obtained. A male and a female, taken January 23 and March 1 respectively, are immature and differ from the adult as follows: Throat, white, the black confined to chin and sides of throat except a few black feathers; under tail-coverts, tinged with brown; top of head, blackish, forehead, washed with yellow, some of the adult feathers present; back and wing-coverts, dark slate-gray widely edged with olive-green; yellow wing bar paler, the white portion washed with buff; the young male differs from the young female in having a few pale-lavender feathers on throat and breast.

Pitta fastosa sp. nov.

Specific characters.—Similar to *Pitta moluccensis* P. L. S. Müller but vertical stripe black not dark brown.

Type.—No. 11,900, ♀, Bureau of Science Collection; Island of Basilan, P. I.; February 9, 1907; Celestino and Canton.

Description of type.—Sides of head including lores, cheeks, supercilia, and ear-coverts black connected by wide black collar; wide vertical stripe black, bordered on each side by a wide stripe of fulvous brown, the feathers edged with pale-buff on exterior webs; back, scapulars, and tertiaries dark green; rump, upper tail-coverts, and lesser wing-coverts bright ultramarine-blue; chin, black; throat, white; lower throat, breast, abdomen, and flanks ruddy-buff, most intense on breast; vent, under tail-coverts, and middle of abdomen bright-red; tail, black tipped with dull-blue; primaries black, each feather with a white patch, mesial and smallest on first, reaching tip on seventh; secondaries, black, edged with dull blue on terminal half; alula, primary coverts, axillaries, and wing lining black. Length in flesh, "7.5" inches; wing, 4.65; tail, 1.58; culmen from base, 1.10; bill from nostril, 0.72; tarsus, 1.44.

The type and only specimen was secured near the town of Isabela. Oates[1] states that *Pitta moluccensis* is found in the Philippines but Walden[2] makes no remarks on the species in his review of Philippine ornithology and none of the more recent collectors has taken it.

Pitta erythrogaster Temm.

A young male was taken March 7.

Pitta atricapilla Lesson.

Several specimens.

Hirundo javanica Sparr.

This swallow was building nests in December and January.

Hemichelidon griseisticta (Swinh.).

A female was collected January 15 and this species is new to the Basilan list.

Cyornis philippinensis Sharpe.

A female was preserved.

Muscicapula basilanica (Sharpe).

One female specimen.

[1] Oates: Bds. of British Burmah (1883), **1**, 416.

[2] *Trans. Zool. Soc.* (1875), **9**, 187–89.

Hypothymis occipitalis (Vig.).

A male in fine plumage was taken January 16; numerous other individuals were seen.

Hypothymis superciliaris Sharpe.

This species was fairly abundant and several specimens were taken.

Cyanomyias cœlestis (Tweed.).

Fairly abundant and usually found in company with the last two species. In a male taken February 2 the longest crest feathers measure 1.5 inches. The male taken by me near Mariveles, Luzon, differs in no way from Basilan specimens.

Rhipidura nigritorquis Vig.

A common species.

Zeocephus cinnamomeus Sharpe.

This race appears to differ very little from *Zeocephus rufus*, but fully adult individuals are believed to be quite distinguishable. I will here transcribe pertinent MS. notes by Worcester and Bourns: "We have some suggestions to offer, after looking over our series of thirty-one specimens from Luzon, Mindoro, Panay, Negros, Cebu, Basilan, Sulu, and Tawi Tawi. The immature birds of *Z. rufus* have the white belly and general coloring of *Z. cinnamomeus*. They are not to be distinguished from birds of the latter species. Second, out of fifteen specimens from the south, seven do not show a trace of white on the belly, and are of a uniform deep rufous color. Third, we have a male bird in breeding plumage from Cebu which is indistinguishable, so far as shade of rufous is concerned, from Basilan birds. The confusion between the two species is thus readily understood. Are they then distinct? We think they are for the following reasons. The average fully adult bird from the northern islands is very much darker in color than the darkest of the southern birds. The northern birds have the tail much more strongly graduated than that of the birds from the south. None of our specimens from the south show any special elongation of the central tail-feathers. The northern birds in good plumage all have the central tail-feathers decidedly elongated. In one specimen from Tablas and another from Sibuyan the central tail-feathers exceed the rest by full three inches. Other birds, collected at the same time and place do not show nearly so strong a development of these feathers, but the fact remains that nothing even approaching it is shown by our specimens from the south.

"The dark tips of the tail-feathers described by Dr. Sharpe as characteristic of *Z. cinnamomeus* are simply a sign of immaturity, as is the white of the belly.

"*Zeocephus rufus*, then, inhabits the northern and central Philippines, and is to be distinguished from *Z. cinnamomeus* by its darker color when fully adult, and by its more strongly graduated tail, which has the central tail-feathers at least three inches longer than the others when the birds are in perfect plumage. A male from Sibuyan with elongated central tail-feathers measures *11.25 inches in length; tail, 6.40.*"

I may add that a male collected by me in Sibuyan June 28, 1904, was 12 inches in total length and the tail measures 7.45, the central feathers exceeding the others by 3.38.

Abrornis olivacea Moseley.

A female taken December 31 does not differ from a female taken in Bohol.

Rhinomyias ruficauda (Sharpe).

Fairly abundant in forest.

Artamides kochi Kütter.

An abundant species. In some female skins the black bars of under tail-coverts are almost entirely wanting. Specimens from Bohol and from Basilan are specifically identical and differ in no way.

Edoliisoma mindanense (Tweed.).

Numerous specimens from Basilan agree with the description of the type from Mindanao and are doubtless identical with the above species. Birds in young banded plumage were taken January 12 and 19 and March 7. *Edoliisoma elusum* is found to be quite distinct from this species. In the male of *E. mindanense* the rump and upper tail-coverts are pale-gray, the coverts tipped with white, while in the male of *elusum* the back, rump, and tail-coverts are uniform. The females of the two species differ in the same way and in addition the female of *mindanense* has the abdomen and under-tail coverts very pale-gray, almost white, while in the female of *elusum* the under parts are uniform slate-gray.

Pericrocotus cinereus Lafr.

Two specimens of the ashy minivet were secured February 18; this appears to be the most southern point in the Philippines from which the species is known.

Lalage niger (Forster).

Fairly common.

Irena melanochlamys Sharpe.

This species was very abundant in Basilan and was more often killed in small trees near cultivated land than in forest. The figure which accompanies the original description[3] represents very poorly the coloration of lower parts. In the plate the line between black and blue of fore breast is altogether too sharpely defined and the blue is far too light.

Iole rufigularis (Sharpe).

This distinct species of fruit-thrush is abundant and does not differ in habits from its relative found in Luzon.

Poliolophus urostictus (Salvad.).

I am inclined to think that Steere's name *Poliolophus basilanicus* may have to be recognized for the bird inhabiting Basilan. The bill is noticeable longer and the white spots of rectrices occupy more space in Basilan specimens than in others from Luzon. The species is fairly abundant in the forest near Isabela.

Pycnonotus goiavier (Scop.).

Very abundant.

Ptilocichla basilanica Steere.

The length of tarsus (.11) given in the original description[4] is clearly a misprint for 1.11 inches.

Zosterornis capitalis (Tweed.).

Three specimens taken during February and March.

Macronus striaticeps Sharpe.

Abundant.

Copsychus mindanensis (Gm.).

One female, December 18.

[3] *Trans. Linn. Soc.* Ser. 2 Zool. 1, 334.

[4] Steere: List birds and mammals Steere Exp., Ann Arbor (1890), 18.

Locustella ochotensis (Midd.).

A male taken January 2. The species was abundant on flooded rice land and has not been recorded from Basilan.

Orthotomus mearnsi sp. nov.

Orthotomus frontalis Sharpe, Trans. Linn. Soc. 2d ser. Zool. (1877), **6**, 336–37 (pt.); Tweeddale, Proc. Zool. Soc. (1879), 72, McGregor and Worcester, Hand-List (1906), 88 (pt.).

Specific characters.—Similar to *Orthotomus frontalis* Sharpe but chestnut of forehead extending on crown to or nearly to posterior margin of eyes, not ending abruptly; the whole crown and nape slightly suffused with chestnut; behind eye the chestnut extends over side of nape; the crown never clear gray as in *O. frontalis*.

Type.—No. 6043, ♂, Bureau of Science Collection; Isabela, Basilan, P. I.; December 15, 1906; R. C. McGregor and A. Celestino.

Description of type.—Forehead, lores, and ring around eye chestnut, this color extending on crown to about opposite center of eye and then gradually fading, becoming merely a wash on occiput and neck; from behind eye the chestnut extends backward a little stronger than on back of head; rest of upper parts, including wings light olive-green; rectrices with light edges and wide, dusky tips; under parts white with more or less of the gray bases of feathers showing on throat and breast; flanks, pale greenish-yellow; thighs, chestnut. Total length in flesh, 4.5 inches; wing, 1.84; tail, 1.74; tarsus, 0.84.

Female.—The female does not differ from the male.

This species which is quite distinct, has been confused with *O. frontalis*, the error having originated with Sharpe who apparently had one male from Zamboanga, Mindanao, and two males from Basilan; the latter were supposed to be young birds. In the paper cited, Sharpe says: "The two young specimens seen to me to belong to the same species as the adult male: but this is by no means certain; for in one specimen I can detect a slight rufous shade on the sides of the crown, the adult *O. frontalis* of course not having this colouring."

Tweeddale also remarked the same difference and ascribed it to individual variation. He says: "The amount of rufous on the head of this species varies considerably in different individuals. In some it occupies the whole forehead and extends back to the vertex, and also colours the ear-coverts and a broad space below the eyes."

For comparison with Basilan birds I have had two examples collected by Mearns near Zamboanga and three collected by Clemens near Camp Keithley, Lake Lanao, Mindanao. The large series collected by us in Bohol are identical with specimens from Mindanao.

Orthotomus cinereiceps Sharpe.

Fairly abundant. Specimens occur with different amounts of white on chin and throat and I believe this is a sign of immaturity, the old birds having chin and throat pure black.

Acanthopneuste borealis (Blas.).

A male was taken December 24 and a female January 2. The occurrence of this species in Basilan appears to have been overlooked.

Artamus leucorhynchus (Linn.).

Fairly abundant.

Otomela lucionensis (Linn.).

A few examples seen.

Hyloterpe apoensis Mearns.
The thick-head of Basilan appears to belong to this species.

Callisitta lilacea (Whitehead).
This fine species is easily recognized as pointed out by Grant,[5] by the feathers of the face and ear-coverts being lilac instead of blue. The white loral spot is washed with lilac and there is a distinct nuchal band of the same color. A specimen of *C. œnochlamys* from Cebu has a heavier violet wash on lower parts than specimens from Bataan Province, Luzon.

Rhabdornis minor Grant.
A number of specimens secured.

Zosterops basilanica Steere.
The Basilan silver-eye was rarely observed and but few specimens were taken.

Dicæum papuense (Gm.).
Two males taken.

Dicæum hypoleucum Sharpe.
A number of specimens killed from flower trees.

Prionochilus olivaceus Tweed.
Specimens from Bohol and from Basilan seem to be specifically the same.

Eudrepanis pulcherrima (Sharpe).
A few specimens collected.

Cinnyris juliæ Tweed.
Abundant.

Cinnyris jugularis (Linn.).
Less abundant than the last.

Arachnothera flammifera Tweed.
Specimens from Bohol have bills considerably shorter than specimens from Basilan, but the coloration does not differ.

Anthreptes chlorigaster Sharpe.
A male was taken January 10.

Budytes leucostriatus Hom.
A male in winter plumage was taken January 2. The species is unrecorded from Basilan.

Anthus gustavi Swinh.
One specimen was killed on Malamaui.

Munia jagori Martens.
Very few seen.

Uroloncha everetti (Tweed.).
One female taken December 31.

Oriolus chinensis Linn.
Abundant.

Oriolus steerei Sharpe.
The small forest oriole of Basilan was very abundant near Isabela and a good series was collected.

[5] Grant: *Ibis* (1906), **6**, 474.

Dicrurus striatus Tweed.

This species was very abundant near Isabela. A female taken January 15 differs from the usual specimens in having feathers of lower breast and abdomen tipped with gray. A pensile nest of this species found March 12 is composed of plant fibers. Its inside diameter is 3 inches and its inside depth is 2 inches. The three eggs are light cream, almost white, in color decorated with faint spots of pale lilac and brighter spots of reddish brown, mostly near the larger end of the egg. The eggs measure: 1.14 by 0.76; 1.15 by 0.75; 1.16 by 0.77.

Sarcops melanonotus Grant.

Abundant.

Lamprocorax panayensis (Scop.).

Abundant.

Corone philippina (Bonap.).

Abundant.

DESCRIPTIONS OF FOUR NEW PHILIPPINE BIRDS.

By Richard C. McGregor.

Turnix celestinoi sp. nov.

Specific characters.—Similar to *Turnix whiteheadi* but larger, bill longer and heavier, wing and tarsus longer, coloration darker.

Type.—No. 5408, ♂, Bureau of Science Collection; Guindulman, Bohol Island, P. I.; collected June 22, 1906 by McGregor, Celestino and Canton.

Description of type.—Above, ground color black; feathers of head narrowly edged with dull-buff, paler on forehead; a narrow, median line of pale-buff from forehead to nape; hind neck, mantle, rump, and tail coverts with wavy broken cross lines of dark rusty-buff, obsolete on neck; lores and side of head, light-buff with small, black tips to feathers; a patch on each side of neck pale vinaceous-buff with narrow, black cross-lines; chin and throat, white, each feather with narrow buff tip; middle of abdomen, white; rest of lower parts rusty-buff, a trifle lighter than in *T. worcesteri;* sides of breast marked with a wide, black bar on each feather; primaries, secondaries, primary covers, and alula, slate; first primary and first feather of alula edged exteriorly with ocherous buff; secondary coverts and tertials with wide edges of ocherous-buff preceded by large, black spots or bars; wing lining and axillaries, slate; tail, bluish-slate and hidden by the long coverts. Total length, 5.0 inches; wing, 2.58; tail, 0.70; exposed culmen, 0.45; depth of bill at angle of gonys, 0.16; tarsus, 0.78; middle toe with claw, 0.74.

Zosterornis affinis sp. nov.

Zosterornis nigrocapitatus McGregor, Publications of the Bureau of Government Laboratories, Manila (1905), No. 34, 29.

Specific characters.—Similar to *Zosterornis nigrocapitata* (Steere) but slightly larger; chestnut of chin and upper throat diffused and not forming a patch on each side.

Type.—No. 10260, ♂, Bureau of Science Collection; Lamao, Bataan Province, Island of Luzon, P. I.; collected December 3, 1904 by Celestino and Canton.

Description of type.—Forehead and crown, black, the shafts obscurely whitish; a small patch of chestnut behind each eye, next to the black crown; general color above dull olive-gray, feathers of neck and mantle with conspicuous, narrow, whitish shaft lines; rump, uniform; a narrow ring around eye, ear coverts, and cheeks gray with pale-yellow shaft lines; chin, throat, and fore breast, pale lemon-yellow the chin heavily washed with chestnut rufous which becomes gradually less on throat and disappears on breast; middle of breast and abdomen, very pale yellow, their sides gray, overlaid with a faint yellow wash; under tail coverts pale yellow; wings blackish-brown, outer edges of quills lighter and inner edges whitish; median and lesser coverts with light shaft lines; upper tail coverts dull olive-brown; rectrices, dark brown, except the outer feather, their outer webs

edged with olive-brown, all but the center pair tipped with white, increasing in extent towards the outermost feather which has its outer web almost entirely white. "Length, 6.00 inches;" wing, 2.70; tail, 2.40; exposed culmen, 0.58; bill from front margin of nostril, 0.41; tarsus, 0.78.

The exact type locality of *Parus elegans* Lesson is unknown, but it is fair to assume that specimens from Luzon represent this species. Specimen No. 452 ♂, Bureau of Science Collection; Mariveles, Bataan Province, Luzon; February 18, 1902; McGregor and Celestino, is here used as a basis for comparison. It may briefly be described as follows:

Pardaliparus elegans (Lesson).

Head above, neck, cheecks, chin, throat, and fore breast glossy-black; space below eye, ear coverts, sides of neck, a large irregular spot on hind neck, breast, abdomen, under tail-coverts, and thighs lemon-yellow; flanks lightly washed with greenish-yellow; mantle with large spots of black, yellow, and white; lower back and rump olive-green; upper tail-coverts and rectrices black, the latter with white tips and two or three outer pair, with a white spot in middle of outer web; wings black; median and greater coverts and secondaries with large, white tips; small white spots on alula; outer webs of primaries narrowly edged with white or pale olive-green; quills edged with white on inner web; under wing coverts white, edged with yellow and mottled with blackish; irides and bill black; feet and nails plumbeous. Length in flesh, 4.75 inches; wing, 2.58; tail, 1.66; exposed culmen, 0.38; tarsus, 0.75.

Pardaliparus albescens sp. nov.

Parus elegans McGregor, Bull. Philippine Mus. (1903), **1**, 11 (Ticao and Masbate).

Pardaliparus elegans McGregor and Worcester, Publications of the Bureau of Government Laboratories (1906), **36**, 94 (part).

Specific characters.—Similar to *P. elegans* Lesson, but little or no olive-green on upper parts and the white much more extensive, to a large extent replacing the black.

Type.—No. 1000 ♂ adult, Bureau of Science Collection; Ticao Island, P. I.; May 9, 1902; R. C. McGregor and A. Celestino, collectors. Total length in flesh, 4.37 inches; wing, 2,53; tail, 1.55; exposed culmen, 0.38; tarsus, 0.72. Irides dark; bill black; legs and nails lead-color.

Remarks.—Gadow[1] observes that: "*Immature* birds and females have the back more yellow and olive-grey, the white spots and the white wash getting more pronounced in old birds, sometimes giving the back a nearly white appearance." While this is true, the characters assigned to the present species are believed to be quite independent of age and season. Adults from Masbate and Ticao agree in having these characters, while not one in a large series from Luzon shows them. It may be added that the wearing away of the tips of the dorsal feathers produces a considerable difference in the bird's appearance and in birds with worn plumage the yellow head band, the breast, and the abdomen become much paler in color than in freshly moulted birds. Excluding young birds, I have before me two skins from Ticao, three from Masbate, three from Mariveles, Luzon and 19 from Baguio, Benguet, Luzon. For a large part of the Benguet series I am indebted to Dr. E. A. Mearns.

[1] Gadow: *Cat. Bds.* (1883), **8**, 23.

Pardaliparus edithæ sp. nov.

Pardaliparus elegans McGregor, Bull. Philippine Mus. (1904), **4**, 27.

Specific characters.—Size and color pattern as in *P. elegans* from which it is most easily distinguished by the reduction of the white spots on wing coverts and the general paler yellow, particularly of the light band on side of head and neck which is nearly pure white.

Type.—No. 3475, ♂, Bureau of Science Collection; Calayan Island, Babuyan Group, P. I.; collected October 5, 1903 by McGregor and Celestino.

Description of type.—Top of head, sides of neck, and mantle, glossy blue-black; an irregular white patch in center of nape; a number of large, white spots on mantle; back and rump gray washed with olivaceous; upper tail coverts glossy black; chin, throat and fore breast, dead black forming a large triangular patch, bounded above by a broad band of white, slightly washed with yellow, which extends under eye across ear coverts onto side of neck; rest of lower parts pale lemon-yellow washed with olivaceous on sides on neck and abdomen and on flanks; wings, glossy black; primaries, narrowly edged with gray on their outer webs and with white on the inner; greater and median coverts with white spots at tips (much smaller than in *P. elegans* and not forming bands as in that species); secondaries tipped with white; tail, black with white markings as in *P. elegans*, but the white tips much smaller than in the latter species. Bill, black except basal third which is whitish; legs dull-blue; nails horn-brown. Total length, 4.8 inches; wing, 2.66; tail, 1.70; culmen from base, 0.48; bill from nostril, 0.39; tarsus, 0.72; middle toe with claw, 0.68.

Pardaliparus mindanensis (Mearns).

Pardaliparus elegans mindanensis Mearns, Proc. Biol. Soc. Wash. (1905), **18**, 8 (Mindanao).

This species is the smallest among the Philippine members of its genus; it may be recognized by its small bill and the dark and yellow coloration of upper parts.

THE OCCURRENCE OF BLYTH'S WATTLED LAPWING AND THE SCAUP DUCK IN THE PHILIPPINE ISLANDS.

By Richard C. McGregor.

Through the interest of Dr. Leon Guerrero, a Filipino naturalist residing in Manila, the Bureau of Science has aquired a perfect specimen of Blyth's wattled lapwing, *Microsarcops cinereus* (Blyth),[1] which represents a subfamily of birds not previously known to occur in these Islands. Sharpe gives the range of this species as "From Corea and the southern Japanese islands to Mongolia and northern China, wintering in southern China, the Indo-Burmese countries, and northeastern Bengal." The species may prove to be a regular winter visitant to the Philippines.

The present specimen, a male in young winter plumage, was taken January 20, 1906, near Malabon, a short distance from Manila. The specimen is about 12.3 inches in length; wing, 9; tail, 4; tarsus, 2.9; culmen, 1.5. This bird resembles a large plover, but is distinguished by having a small hind toe, a short and blunt wing spur, and a small, fleshy wattle or lappet between the eye and base of bill. The plumage may be described as follows:

Upper parts, brown with a slight gloss, the feathers with dusky shafts; forehead and neck a trifle lighter and grayer; upper tail coverts and tail, white, rectrices with a subterminal blackish band which is widest on central pair and absent from outermost pair; chin whitish; throat and sides of head and neck, light brown with whitish streaks; breast brown, rest of under parts, white; wing coverts, brown like the back but a little paler, median coverts with narrow, white tips, except the outer ones which are pure white; greater coverts, nearly entirely white, with brown at extreme base, increasing in extent on inner ones; alula dark brown; primary-coverts and quills, black; secondaries, white, the inner one externally light brown and the innermost brown like the black. "'Basal two-thirds of bill deep yellow, the terminal third black; feet dull yellow, claws black; edges of eyelids and lappets deep yellow' (*E. W. Oates*)."

Through the courtesy of Mr. W. Parsons, of Manila, I am permitted to record the capture of a male scaup duck, *Fuligula marila* (Linn.),[2] at Tanay, Laguna de Bay, Luzon, in November, 1906. This species is unrecorded from the Philippines, although found as a winter visitant in China and Japan; it has also been recorded from the Liu Kiu Islands.[3]

[1] Sharpe: *Cat. Bds.* (1896), **24**, 133.
[2] Salvadori: *Cat. Bds.* (1895), **27**, 355.
[3] Stejneger: *Proc. U. S. Nat. Mus.*, Wash. (1887), **10**, 415.

NOTE ON A BIRD UNRECORDED FROM MINDANAO.

By Richard C. McGregor.

Rhabdornis inornata Grant.

Rhabdornis inornatus Grant, Bull. Brit. Ornith. Club (1896), **6**, 18; Ibis (1897), **3**, 235 pl. 6, fig. 2.

This species has been met with in Samar only, where Whitehead took three males, the female to the present time remaining unknown. In a collection recently received from Chaplain Joseph Clemens, United States Army, is a female bird evidently of this species. It agrees quite closely with the colored plate of the male but differs in having top of head dull-brown instead of dark-gray. This specimen was taken near Camp Keithley, Lake Lanao, Mindanao, on May 3, 1907, and yields the following measurements: Wing, 3.50 inches; tail, 2.26; exposed culmen, 0.64; tarsus, 0.80; middle toe with claw, 0.89.

NOTES ON SPECIMENS OF THE MONKEY-EATING EAGLE (PITHECOPHAGA JEFFERYI GRANT) FROM MINDANAO AND LUZON.

By Richard C. McGregor.

Through the courtesy of Chaplain Joseph Clemens and Lieutenant Farrel of the Fifteenth Infantry, United States Army, I have been able to examine a specimen of *Pithecophaga jefferyi*, taken near Camp Keithley, Lake Lanao, Mindanao. The specimen was purchased from a Moro by Lieutenant Farrel and was sent by him to the Bureau of Science. Unfortunately, several of the primaries on each wing have been clipped and the cere has apparently been eaten by ants, but otherwise the specimen is in good condition. Its sex was not determined. Compared with the one in the Bureau of Science collection, which was taken in Luzon, the present specimen is found to differ in being slightly larger and the feathers of the chin, the side of the jaw, and of the malar region have distinct, blackish shaft stripes.

The following measurements may be added: Wing (primaries clipped), 23.75 inches; tail, 18.25; chord of culmen without cere, about 2.35; depth of upper mandible at nostril, 1.54; width of upper mandible where cere meets tomium, 0.84; tarsus, 5; middle toe with claw, 4.60; hind toe with claw, 3.54; width of middle tail feather, 3.30.

Later, a second more perfect specimen was received from Chaplain Clemens. This specimen, a male, was taken near Camp Keithley, September 27, 1906, and yields the following measurements: Wing, 24.80; tail, 18.75; chord of culmen without cere, 2.57; depth of upper mandible at nostril, 1.66; width of upper mandible where cere meets tomium, 0.80; tarsus, 4.63; middle toe with claw, 3.78; hind toe with claw, 3.22; width of middle tail feather, 3.30.

On May 11, 1907, Mr. H. M. Ickis, geologist in the Bureau of Science, killed a specimen of the monkey-eating eagle on the Agus River, in eastern Rizal Province, Island of Luzon. This is, I believe, the first specimen positively known to have been taken in Luzon. The head, a wing, and a foot were brought to Manila. In this specimen the feathers of the chin and the side of the face have the black shaft stripes noted in the specimens from Mindanao. Measurements were taken from the fragments as follows: Wing, 23.25; chord of culmen without cere, 2.45; depth of upper mandible at nostril, 1.57; width of upper mandible where cere meets tomium, 0.73; tarsus, 4.5; middle toe with claw, 3.83; hind toe with claw, 3.25.

NOTES ON BIRDS COLLECTED IN CEBU.

By Richard C. McGregor.

INTRODUCTION.

Cebu Island is of very peculiar ornithological interest, this interest is so great not only because of the species lacking in its fauna but also because of those limited in their range to its territory.

Zoölogically, Cebu is the most anomalous island of the Philippine Archipelago. The greater part of its west coast is nearly parallel with the east coast of Negros; while the southern point of Cebu is within 4 miles of the Negros coast, yet the species of birds known from the two islands are very different.

Not far distant and southeast of Cebu is the island of Bohol [1] but the birds of Cebu and Bohol show scarcely any relationship; in fact these two islands are less closely related than are Luzon and Basilan.

Worcester [2] has fully discussed the fauna of Cebu and has shown that while it contains some elements strongly suggestive of a close relationship to that of the central Philippines,[3] the island in reality must be separated from that group.

The positive evidence of the necessity for separating Cebu from the central Philippines consists in the presence of the following species which are peculiar to Cebu:

SPECIES PECULIAR TO CEBU.

Phapitreron frontalis.
Loriculus chrysonotus.
Oriolus assimilis.
Dicæum pallidior.
Prionochilus quadricolor.
Cryptolopha cebuensis.
Chloropsis flavipennis.[4]
Cittocincla cebuensis.
Iole monticola.
Edoliisoma cebuensis.
Artamides cebuensis.

[1] The town, of Cebu and Point Corte, the nearest point in Bohol, are less than 20 miles apart, with Mactan, Olango, and other smaller islands between them. Further south Argao in Cebu is but 14 miles from the Bohol coast.

[2] *Proc. U. S. Nat. Mus.*, Wash. (1897), **20**, 579–580. For an account of the topography and geology of Cebu see Smith: *This Journal* (1906), **1**, 1043.

[3] The Central Philippines comprise the islands of Negros, Panay, Guimarās, Bantayan, Masbate, and Ticao.

[4] Erroneously recorded from Mindanao. See Worcester: *Publications of the Bureau of Government Laboratories*, Manila (1906), No. **36**, 78 (footnote).

On the other hand we find that the genera *Chrysocolaptes* and *Orthotomus* and the families *Bucerotidæ* and *Timeliidæ*, all conspicuously represented in Negros, are entirely wanting in Cebu. Worcester[5] says:

> It seems to me evident from the large number of important forms in the central Philippines which do not occur in Cebu, and from those in Cebu which are wanting in the central Philippines, that the avifaunæ of the two islands were originally very distinct. The wonder is not that eight species[6] should have made their way in one direction or the other over 4 miles of sea, but rather that 34 species should have failed to cross or, having crossed, should have failed to establish themselves.

The collections which form the basis of the present paper were made by the author and assistants at Danao, July 24 to August 3, 1906; at Toledo, September 21 to November 14, 1906; and at Minglanilla, November 15 to 26, 1906.

Danao is on the east coast some 20 miles north of the town of Cebu. Collecting at Danao was almost useless and but two important species, *Accipiter manillensis* and *Tachornis pallidior*, were secured.

Toledo, on the west coast, was reached from the Island of Bantayan. It was at this point that Worcester and Bourns did their most important work in the island. We found that a large part of what was level forest land sixteen years ago is now sugar-cane field. The larger trees have been cut and the little forest remaining along streams and on steep hillsides is rapidly disappearing.

Minglanilla is on the coast a short distance south of Cebu. Collections of water birds only were made at this point.

Of the 114 species collected or fully identified by us, 24 appear to be unrecorded from Cebu, making a total of 149 bird species now known from Cebu.

SPECIES NOT PREVIOUSLY RECORDED FROM CEBU.

Amaurornis phœnicura.
Arenaria interpres.
Squatarola helvetica.
Ochthodromus geoffroyi.
Ochthodromus mongolus.
Ægialitis peroni.
Ægialitis alexandrina.
Numenius cyanopus.
Terekia cineria.
Ancylochilus subarquatus.
Glottis nebularius.
Limicola platyrhyncha.
Egretta garzetta.
Accipiter gularis.
Accipiter manillensis.
Haliaëtus leucogaster.
Caprimulgus griseatus.
Caprimulgus manillensis.
Salangana whiteheadi.
Tachornis pallidior.
Hirundo gutturalis.
Hirundo striolata.
Budytes leucostriatus.
Anthus gustavi.

[5] *Proc. U. S. Nat. Mus.*, Wash. (1897), **20**, 590.

[6] These eight species are: *Phapitreron nigrorum, Alcyone nigrirostris, Xantholæma roseum, Yungipicus maculatus, Dicrurus mirabilis, Æthopyga bonita, Æthopyga magnifica, Hyloterpe winchelli.*

NOTES ON THE SPECIES OBSERVED.

Gallus gallus (Linn.).

The jungle fowl is rare in Cebu; it was seen in the vicinity of Toledo where a few indivduals were killed and a very young chick was caught in November.

Osmotreron axillaris (Bp.).

Rare; only one obtained.

Osmotreron vernans (Linn.).

Rare; only one killed.

Phapitreron nigrorum Sharpe.

Rare; one specimen from forest near Toledo.

Leucotreron occipitalis Bp.

An adult male from vicinity of Toledo.

Muscadivora ænea (Linn.).

Feeding in very tall trees near Toledo, making its capture next to impossible. One or two examples killed.

Streptopelia dussumieri (Temm.).

Not common; a female killed November 25 had a hard shelled egg in the oviduct.

Chalcophaps indica (Linn.).

One day while I was stationed near a fig-tree waiting for *Dicæidæ*, an Indian bronze-winged dove lit on the ground within three feet of me, then discovering me it flew off in great haste. This species does not seem to be common in Cebu.

Hypotænidia torquata (Linn.).

One specimen from Toledo.

Amaurornis olivacea (Meyen).

An adult of this species was snared by a native boy and on October 25 the same boy caught a downy young bird probably of the same kind. The legs appeared very large and long in proportion to the size of its body. The bill was black, with the tip whitish; irides and legs dark-brown; entire plumage coal-black; nail on wing prominent. No specimen was obtained by us.

Amaurornis phœnicura (Forster).

A specimen was taken at Danao but the species was not observed elsewhere in the island.

Sterna boreotis (Bangs).

Not uncommon off shore near Toledo where it was feeding among schools of minute fish. One example killed from the beach on November 12.

Arenaria interpres (Linn.).

The turnstone was obtained at Toledo in September and at Minglanilla in November.

Squatarola helvetica (Linn.).

Three specimens in winter plumage taken at Minglanilla, November 16 to 23.

Charadrius fulvus (Gm.).

The Eastern golden plover was found in small numbers at Minglanilla. Two from Toledo, September 28, retain many black feathers on breast and abdomen.

Ochthodromus geoffroyi (Wagl.).

Very common at Minglanilla in November; one taken at Toledo, September 28.

Ochthodromus mongolus (Pall.).
Abundant at Minglanilla in November.

Ægialitis dubia (Scop.).
One from Minglanilla, November 23, and a bird in adult plumage from Toledo, October 24.

Ægialitis peroni (Bp.).
One from Toledo, September 29.

Ægialitis alexandrina (Linn.).
Abundant at Toledo and Minglanilla.

Numenius cyanopus Vieill.
A female of this large curlew was taken at Toledo, November 11 and a male at Minglanilla, November 19.

Numenius variegatus (Scop.).
This smaller curlew was not uncommon near Toledo and a specimen was taken at Minglanilla, November 20. A female was taken at Danao, August 1.

Terekia cinerea (Güldenst.).
This curious sandpiper was met with in considerable numbers on the tide flats near Minglanilla in November. At or near high water the species was found. in company with *Heteractitis,* resting among the roots of mangrove trees and at such a time it was no uncommon occurrence to kill several specimens of each species at one shot. As the rocky flats became exposed these birds scattered to feed and became more difficult to approach. The bill of the female is much longer than that of the male, but the plumage is similar in the two sexes. In a male taken November 20, the bill was black, except the yellow base, legs bright orange-chrome, and nails black. Specimens from Minglanilla agree perfectly with the description given by Oates.[7] Instead of the vernacular names "curlew sadpiper" and "pigmy curlew" quoted by Oates as being applied to this species, godwit sandpiper would seem more appropriate as the bill of *Terekia* curves upward just as with the godwits.

Ancylochilus subarquatus (Güldenst.).
The only specimen of this stint obtained is a male which was killed from among a flock of *Limonites* at Minglanilla, November 17.

Totanus eurhinus (Oberh.).
A male and female of the redshank from Minglanilla in November.

Heteractitis brevipes (V.).
This tatler was very abundant near Minglanilla and specimens are mostly in winter plumage, yet a few show traces of cross bars remaining from the summer dress.

Actitis hypoleucus (Linn.).
One from Minglanilla.

Rhyacophilus glareola (Gm.).
Noted at Danao.

Glottis nebularius (Gunn.).
Several specimens in winter plumage from Minglanilla. In a male taken November 20 the bill was plumbeous, darker at tip; legs, drab, more bluish at joints and more yellowish on the tarsi; claws, black.

[7] Birds Brit. Burmah (1883), **2**, 407.

Limonites ruficollis (Pall.).

Very abundant on tide flats at Minglanilla where a number were taken. September 20 in the channel between Cebu and Negros I observed 40 to 50 small sandpipers which were probably of this species. They were in flocks of from three to eight and apparently migrating southward. Small parties often lit near our boat, rested a few moments and continued their flight.

Limicola platyrhyncha (Temm.).

A male from Minglanilla, November 23, is in fresh winter plumage; bill and legs black. This sandpiper has not been previously recorded from Cebu.

Egretta garzetta (Linn.).

A male from Minglanilla, November 17. Legs, black, feet and lower part of tarsi, greenish-yellow; bill, black, base of lower mandible, white; irides, yellow; bare skin around eyes pale-yellow.

A female from Minglanilla, November 28. Irides, pale straw-yellow; bill, yellow, mottled with brown; legs, green with patch of black on lower tarsi; skin around eyes, pale green.

Nycticorax manillensis Vig.

A specimen of the Manila night heron was taken on the river near Toledo.

Butorides amurensis (Schrenck).

If this variety is entitled to recognition on the characters of larger size and coarser and stronger bill, then a specimen taken by us at Toledo, October 29, must be labelled with the above name.

Bubulcus coromandus (Bodd.).

A large flock of this common species seen in a mangrove swamp near Minglanilla where one specimen was taken.

Accipiter gularis (Temm. & Schl.).

A female hawk taken at Toledo, October 27, does not differ from specimens from Calayan which I refer to *A. gularis*. Length, 11.6 inches; wing, 7.80; tail, 5.80; tarsus, 1.66. Irides, cere, and legs yellow; bill and nails black. Stomach contained bits of a large green locust.

Accipiter manillensis (Meyen).

A female of this species taken near Danao, July 28, had a nest of small sticks on a horizontal branch of a tall tree. The determined efforts of the parent bird to drive me from the neighborhood indicated that the nest was in use. It was impossible to reach the nest without ropes and other tackle. Total length of fresh specimen, 12.3 inches; wing, 7.10; tail, 5.30; tarsus, 2.12. Bill horn blue; cere waxy green; irides and eyelids chrome yellow; legs greenish yellow; nails blackish.

Butastur indicus (Gm.).

Occasionally seen and heard near Toledo; one killed was very fat.

Haliaëtus leucogaster (Gm.).

A captive of this species was seen in the town of Cebu; individuals were also seen at Toledo.

Haliastur intermedius Gurney.

This species is abundant. On November 6 a pair were observed at work on a nest in a tall tree near the river.

Ninox japonica (Temm. & Schl.).

A specimen was taken.

Ninox spilonota Bourns & Worcester.

A male owl from Oro in the mountains back of Toledo appears at first sight to represent a species very distinct from *N. spilonota*, as much of the plumage is white, this being most conspicuous on scapulars, chin, throat, and under tail coverts. In dimensions, however, this specimen does not differ greatly from a male taken in Sibuyan and I believe that the Cebu skin is merely an extremely light example of the above species.

Cacatua hæmaturopygia (P. L. S. Müll.).

Not very abundant; noted at Danao and Toledo.

Prioniturus discurus (Vieill.).

Fairly common near Toledo.

Tanygnathus lucionensis (Linn.).

Rare.

Loriculus chrysonotus Scl.

While at Toledo we spent considerable time hunting in coconut groves near the beach without finding a single lorikeet, but we found several birds of this species feeding at a few coconut trees near the forest and killed a few solitary birds in the forest. We failed altogether to get adults. The following notes respecting this species are from a manuscript by Worcester and Bourns.

"The only *Loriculus* which we failed to find abundantly in coconut trees where the trees themselves were accessible. In 1888 several days of hard work in the great coconut groves near Carmen, Cebu, brought us but a single specimen. In 1893, however, we found it quite abundant in the woods near Toledo. It is possible that its disappearance from the coconut groves of the east coast is due to the lack of suitable breeding ground near by. The forest has been almost entirely cleared from the Island and the little which remains will soon be gone."

Eurystomus orientalis (Linn.).

The oriental roller was seen at Danao.

Pelargopsis gigantea Walden.

One killed and another individual seen on the river near Toledo.

Alcedo bengalensis Briss.

Obtained along the river near Toledo and on the beach at Minglanilla. *Alcyone* was not once seen.

Ceyx bournsi Steere.

One specimen obtained near Toledo.

Halcyon gularis (Kuhl).

Seen at Danao.

Halcyon chloris (Bodd.).

Collected at Toledo.

Merops americanus P. L. S. Müller.

One specimen of the bay-headed bee-bird from Toledo.

Merops philippinus Linn.

A male from Danao July 25.

Caprimulgus griseatus Wald.

Abundant on the beach near Toledo.

Caprimulgus manillensis Wald.

Less abundant than *C. griseatus* but found in the same place on the beach. A specimen was killed over a grassy field near mangrove swamp.

Salangana whiteheadi (Grant).

A male from Danao, July 27, must be referred to this species as the tail is forked and the tarsi are devoid of plumes.

Salangana troglodytes Gray.

Abundant in the forest near Toledo. One specimen preserved is slightly albinistic.

Salangana marginata Salvad.

A male from Danao, July 26. A nesting colony was found near Toledo. The nests were composed of sandy mud and were plastered against the face of perpendicular cliffs in a narrow gorge. A few birds were building in a small rocky cave. At the time of my visit to the colony there were some twenty nests in process of construction and none contained eggs so far as could be determined.

Tachornis pallidior McGregor.

At Danao the paler palm swift was observed in small numbers over or near the town and a small series was collected. This species was also observed feeding over sugar cane fields near Toledo. The palm swift was never detected near forest where flocks of *Salangana marginata* and *S. linchi* were seen almost daily.

Cacomantis merulinus (Scop.).

One from Danao.

Centropus viridis (Scop.).

Noted at Danao and Toledo.

Xantholæma roseum (Dumont).

A female from Toledo where the species was not uncommon; a male was taken at Danao, July 26.

Yungipicus maculatus (Scop.).

Three specimens from Toledo.

Thriponax javensis (Horsf.).

Taken near Toledo.

Pitta atricapilla Less.

Taken at Danao.

Hirundo gutturalis Scop.

Abundant in the vicinity of Toledo.

Hirundo javanica Sparrm.

One specimen from Toledo.

Hirundo striolata Boie.

Specimens of the mosque swallow were secured at Toledo on September 28 and againt on November 12. The specimens are in freshly moulted plumage and do not differ in any detail from specimens of this type collected in Calayan Island.[8] It is possible that the mosque swallow inhabiting the Philippine Islands may take rank as a geographical race as yet unnamed, but it is impossible for me to characterize such a race wihout typical specimens of *striolata, japonica,* etc.

Cyornis philippinensis Sharpe.

Not uncommon; one from Danao and two from Toledo.

Hypothymis occipitalis (Vig.).

Fairly abundant.

[8] McGregor: *Bull. Phil. Mus.* (1904), No. 4, 33.

Rhipidura nigritorquis Vig.

This common fan-tailed flycatcher was abundant.

Zeocephus rufus (Gray).

One specimen from Toledo, October 19.

Cryptolopha cebuensis Dubois.

This distinct species is not uncommon in the wooded portions of Cebu. A female secured does not materially differ in plumage from the male which was carefully described in the original diagnosis.[9] Irides dark gray; upper mandible black, lower mandible pale yellow; legs and feet light plumbeous.

Measurements of Cryptolopha cebuensis.

Locality.	Sex.	Wing.	Tail.	Exposed culmen.	Tarsus.
Toledo, Cebu	♂	2.30	1.80	0.44	0.72
Do	♂	2.24	1.93	.43	.76
Do	♂	2.30	1.94	.46	.77
Do	♂	2.30	1.80	.46	.76
Do	♂	2.25	1.86	.44	.72

Artamides cebuensis Grant.

Grant[10] characterizes the adult male as "Very nearly allied to the male of *A. mindorensis* Steere, from which it only differs in being larger and in having the feathers covering the nostrils gray instead of deep black." In specimens before me these characters are well defined and it may be added that in *A. mindorensis* the entire lores, the chin, and a patch at base of maxillary ramus are jet black, while in *A. cebuensis* the lores are blackish and the jaw is slate gray uniform with the chin and throat.

Measurements of Artamides mindorensis and A. cebuensis.

Species.	Sex.	Wing.	Bill from nostril.
A. mindorensis	♂	6.32	0.80
Do	♂	6.50	.83
Do	♂	6.38	.84
A. cebuensis	♂	6.72	.92
Do	♂	6.58	.93
Do	♂	6.78	.94

Edoliisoma alterum Wardlaw-Ramsay.

Fairly common in forest along streams. Usually observed at considerable height from the ground and easily detected by its pleasing whistle. A male and female were commonly seen in company and occasionally two pairs were seen in one tree.

This species is separable from the Luzon birds (*E. cærulescens*) as pointed out in the original description,[11] by having the plumage of the male glossed with green,

[9] *Cryptolopha flavigularis* Bourns & Worcester, *Occ. Papers Minn. Acad.* (1894), 1, 23.

[10] *Ibis* (1896), 2, 535.

[11] *Ibis* (1881), 5, 34.

while in *cærulescens* it is glossed with blue. The female of *alterum* is of a lighter gray than the female of *cærulescens*. In *alterum* the three outer rectrices may be narrowly tipped with white, but apparently this is not a constant character and is due perhaps to extreme maturity. Irides, dark brown; bill, legs, and claws, black.

Measurements of Edoliisoma cærulescens and E. alterum.

Species.	Sex.	Locality.	Wing.	Tail.	Bill from nostril.	Depth at angle of gonys.
E. cærulescens	♂	Mariveles, Luzon	5.35	5.00	0.80	0.32
Do	♂	do	5.12	4.60	.74	.32
Do	♂	do	5.18	4.72	.76	.33
Do	♂	do	5.00	4.30	.70	.32
E. alterum	♂	Toledo, Cebu	4.95	4.34	.73	.30
Do	♂	do	5.08	4.54	.72	.32
Do	♂	do	5.35	4.57	.74	.34
Do	♂	do	5.10	4.72	.74	.32

Lalage niger (Forster).

One specimen from Danao.

Chloropsis flavipennis (Tweedd.).

This species was observed in the leafy tops of trees near streams and was very rare, only six specimens being obtained.

Measurements of Chloropsis flavipennis.

Locality.	Sex.	Wing.	Tail.	Bill from nostril.
Toledo, Cebu	♂	3.74	2.96	0.66
Do	♂	3.80	3.00	.67
Do	♂	3.60	2.90	.62
Do	♀	3.60	3.00	.63
Do	♀	3.58	2.88	.59
Do	♀	3.50	2.84	.60

Iole philippensis (Gm.).

Fairly abundant in the vicinity of Toledo.

Iole monticola Bourns & Worcester.

This large and very distinct species was extremely rare and was found only in forest near Toledo.

Measurements of Iole monticola.

Locality.	Sex.	Wing.	Tail.	Exposed culmen.
Toledo, Cebu	♂	4.78	4.26	0.97
Do	♂	4.58	4.40	.96
Do	♂	4.80	4.40	.98

Pycnonotus goiavier (Scop.).

One specimen from Danao.

Copsychus mindanensis (Gm.).
Noted at Danao.

Cittocincla cebuensis Steere.
An immature male from Toledo, October 13, differs from the adult as follows: feathers of crown and nape tipped with dull rusty-brown; wings, dull seal-brown; each, feather of alula and greater coverts with a subterminal spot of ocherous-brown; lesser coverts, black fringed with silvery-gray; lower parts, dull blue-gray, tips of feathers ocherous becoming more rusty on flanks.
Two adult males measure as follows: wing, 3.55, 3.75; tail, 4.16, 3.90 (imperfect); exposed culmen, 0.60; tarsus, 1.08, 1.00.

Pratincola caprata (Linn.).
Seen at Danao only.

Acrocephalus orientalis (Temm. & Schl.).
A female was taken at Toledo, November 13, and another the next day.

Cisticola exilis (Vig. & Horsf.).
One specimen from Danao; common.

Megalurus ruficeps Tweedd.
Fairly abundant near Toledo.

Acanthopneuste borealis (Blas.).
The northern willow warbler was not abundant in Cebu, but two specimens being taken, October 15 and 19 respectively.

Artamus leucorhynchus (Linn.).
Noted at Danao and Toledo.

Cephalophoneus nasutus (Scop.).
A male in fresh plumage from Toledo, October 30.

Otomela lucionensis (Linn.).
A male with pale-gray forehead is typical of the species; another specimen, female, October 18, has the entire upper parts dark, slightly reddish-brown, obsoletely cross-barred; sides of throat and breast, flanks, and thighs with dusky, V-shaped bars, strongly suggestive of immaturity.

Hyloterpe winchelli Bourns & Worcester.
Three specimens of Winchell's thick-head were obtained near Toledo.

Pardaliparus elegans (Less.).
At Danao an adult male of this titmouse was taken July 30. Near Toledo another adult male was taken, October 24, and two young birds were collected, September 26 and October 24, respectively.

Callisitta œnochlamys (Sharpe).
A male from Toledo, October 19.

Zosterops everetti Tweeddale.
A pair from Danao, July 30.

Dicæum papuense (Gmel.).
Abundant and usually found feeding at the fruit of wild fig trees (*Ficus* sp.)

Dicæum pallidior Bourns & Worcester.
This species is the most common member of the family *Dicæidæ* in Cebu. It is closely related to *Dicæum dorsale* but appears to deserve recognition. It is quite probable that the name *Dicæum flaviventer* refers to the same species but from lack of literature I am unable to determine which name has priority.

Dicæum pygmæum (Kittlitz).

An adult male from Toledo, October 18.

Prionochilus quadricolor Tweedd.

This handsome species is rare and strictly confined to the forest. Of over 50 specimens of *Dicæidæ* collected by us in Cebu only five are of this species. An adult male agrees with the original description [12] but the head and neck are black, slightly glossed with blue, not "dull black." The plate is faulty in showing too much yellow on the rump and not enough red on the interscapulars; the latter are clear red with no mixture of yellow. A young male taken October 15, has the lower parts like the adult but upper parts and tips of tertiaries and greater coverts dull olive-green.

Æthopyga magnifica Sharpe.

This large and beautiful sun bird was fairly abundant in small bushes along forest streams. Its song, though not elaborate is very sweet and pleasing. Specimens from Cebu do not differ in any respect from examples collected in Sibuyan.

Æthopyga bonita Bourns & Worcester.

A male and a female from near Toledo.

Cinnyris jugularis (Linn.).

One specimen taken at Danao.

Anthreptes chlorigaster Sharpe.

Only a male and a female obtained.

Motacilla melanope Pall.

This wagtail was seen daily in the vicinity of Toledo.

Budytes leucostriatus Hom.

A pair in plan winter plumage taken on the beach near Toledo, September 29.

Anthus gustavi Swinh.

One specimen from near Toledo, October 29.

Passer montanus (Linn.).

This introduced sparrow has become well established in the town of Cebu and was observed at Danao. It was not observed on the west coast.

Munia jagori Martens.

Jagor's rice-bird was found breeding in numbers near Toledo and several nests containing fresh eggs were taken from screw pines (*Pandanus*) on September 28.

Oriolus chinensis Linn.

One of the more common species in Cebu.

Oriolus assimilis Tweedd.

This forest oriole was not uncommon near Toledo. While it is plainly of the *Oriolus steerei* type it differs in being larger, in the much darker and greener upper parts and under tail-coverts, in the darker throat and breast, in the wider black markings of abdomen, and in the reduced yellow tips of rectrices.

Adult male, October 13. Irides, bright red; bill, dull red-brown; feet, lead-blue; nails, black. Immature male, October 13. Irides white; bill brown; legs lead blue; nails black.

[12] Tweeddale; *Proc. Zool. Soc.* (1877), 762.

Measurements of Oriolus assimilis.

Locality.	Sex.	Wing.	Tail.	Exposed culmen.
Toledo, Cebu	♂	4.80	3.58	0.85
Do	♂	4.90	3.60	.88
Do	♀	4.60	3.38	.86
Do	♀	4.58	3.35	.85

Dicrurus mirabilis Walden & Layard.

A few specimens were taken near Toledo.

Sarcops calvus (Linn.).

A female from Toledo, November 3, has the back rather dark and should perhaps be referred to *S. melanonotus*.

Lamprocorax panayensis (Scop.).

Abundant at Danao and Toledo.

Corone philippina (Bonap.).

Abundant.

BIRDS OBSERVED IN BANTAYAN ISLAND, PROVINCE OF CEBU.

By Richard C. McGregor.

Bantayan is an island 47 square miles [1] in area, lying 8 miles west of the northern portion of Cebu Island and northeast of the northeastern point of Negros. The 22 miles between Bantayan and Negros is partially bridged by the Dons, a series of seven isles varying from 0.1 to 1.3 square miles in area, and very shallow water is found for a considerable distance from Bantayan toward Negros.

The surface of Bantayan is flat, the soil sandy and rather poor, and the native vegetation offers but little attraction. There are no streams and but one or two small, shallow ponds. A large area of tide flats is exposed at low water, affording feeding ground for many migratory shore birds.

Corn is the staple food product, and among fiber plants the pineapple and maguey are planted in quantities affording a steady source of revenue to the inhabitants of the island. The women are industrious and expert workers on the loom.

Groves of coconut trees extending in an almost unbroken band along the shore afford excellent feeding ground for *Loriculus*, but neither search nor inquiry resulted in any evidence of its presence.

Birds were collected on Bantayan from August 20 to September 21, 1906, and 66 species were recorded. Of these *Orthotomus cinereiceps* and *Iole guimarasensis* demonstrate that this island belongs with the central Philippines (Panay, Negros, Guimaras, Masbate, Ticao) and not with Cebu. *Dicrurus mirabilis*, while a central Philippine species, is found also in Cebu; its presence in Bantayan, therefore, merely unites the fauna of that island with the central group without separating it from Cebu.

LIST OF SPECIES.

Megapodius cumingi Dillw.

No individual of this species was seen but I feel justified in recording it from the island on the strength of the examination of two large mounds which were evidently in use by birds on September 3, 1906.

Osmoteron vernans (Linn.).

Two males and a female.

[1] Areas of islands from *Census of the Philippine Islands* (1903), 1, 270.

Leucotreron leclancheri (Bp.).
This dove was rare; one specimen was taken August 23, 1906.

Muscadivora ænea (Linn.).
Uncommon; two specimens.

Myristicivora bicolor (Scop.).
A young bird of this species was taken from its nest on August 24, 1906, and two adult males were killed the same day; very few individuals were seen.

Streptopelia dussumieri (Temm.).
Abundant.

Hypotænidia torquata (Linn.).
One specimen taken.

Gallicrex cinerea (Lath.).
This species is not represented in the collection but was identified in the field beyond any reasonable doubt.

Sterna boreotis (Bangs).
Terns were not uncommon about a sandy beach near Santa Fé and one example was preserved.

Arenaria interpres (Linn.).
Turnstones were abundant, usually keeping in small flocks distinct from other shore birds. Two specimens taken August 27, 1906, still retain much of the summer plumage.

Squatarola helvetica (Linn.).
Rare; one specimen September 5, 1906.

Charadrius fulvus (Gm.).
Two specimens of the Eastern golden plover, August 23, 1906, and September 5, 1906, are in mixed plumage, the black of lower parts, however, still predominating over the white.

Ochthodromus geoffroyi (Wagl.).

Ochthodromus mongolus (Pall.).
The two above species were very abundant on tide flats at low water.

Ægialitis peroni (Bp.).
Usually found singly or in pairs along sandy beaches and much rarer than the two species of *Ochthodromus*.

Numenius variegatus (Scop.).
Curlews were very abundant in large flocks on tide flats near the town of Bantayan. Six specimens preserved are of this species and another much larger species was seen.

Limosa novæ-zealandiæ Gray.
This godwit was abundant on tide flats and specimens were obtained without difficulty, a number often being killed at one shot. Skins preserved, August 20 to September 14, 1906, represent both summer and winter plumages. The natives of Bantayan call this species "ma-ni-ug-suc."

Totanus eurhinus (Oberh.).
A female was taken August 24. Iris brown; bill black except basal half of under mandible which is light orange; legs and feet light reddish orange; claws blackish.

Heteractitis brevipes (Vieill.).

Many specimens taken with remnants of the mottled summer plumage, others in plain winter dress. Known to natives of the island as "ta-ling-ting" but the name is not always restricted to this species.

Actitis hypoleucus (Linn.).

One specimen.

Limonites ruficollis (Pall.).

A good series of this stint. A female of August 27, 1906, still retains much of the pretty summer plumage but the other specimens show little traces of it. Known in Bantayan as "ti-ut'-ti-ut'."

Gallinago megala Swinh.

Snipe are rare in Bantayan as there is little ground suited to their needs. A female was taken September 17, 1906, and a few more were seen.

Ardea sumatrana Raffl.

Each day a number of large herons were feeding in shallow water beyond the tide flats. An immature male was collected August 24, 1906.

Demiegretta sacra (Gm.).

The blue reef heron was seen but once, near Santa Fé.

Nycticorax manillensis Vig.

A small flock of Manila night herons was noted.

Butorides javanica (Horsf.).

Abundant in mangrove swamps.

Dendrocygna arcuata (Horsf.).

Ducks, all of this common species, were obtained on a small shallow pond near the eastern coast of the island.

Fregata ariel (Gould).

This graceful bird was first observed on September 5, 1906, when three individuals flew over, passing from east to west followed at about 100 yards by four more, one of which was killed; a single bird was seen two days later. The natives say that this bird "eats wind" and that it never alights; the native name on Bantayan is "con-pi-sao'." The specimen collected was a male; length, 28.8 inches; extent of wings, 63.0 inches; bill gray; gular pouch white with some scarlet wash.

Circus melanoleucus (Forster).

A fine adult male of this marsh hawk was killed in a "cogon" grass field on September 3, 1906.

Haliaëtus leucogaster (Gm.).

Fairly abundant.

Haliastur intermedius Gurney.

Abundant.

Elanus hypoleucus Gould.

An adult specimen was killed in a bamboo, September 17, 1906.

Cacatua hæmaturopygia (P. L. S. Müller).

One specimen; rare.

Tanygnathus lucionensis (Linn.).

One specimen; rare.

Eurystomus orientalis (Linn.).

One specimen; rare.

Alcedo bengalensis Briss.

A female taken September 8, 1906; very rare.

Halcyon chloris (Bodd.).

One male; not uncommon.

Merops philippinus Linn.

An hour before sunset numbers of bee-birds often appeared near the town, moving in small circles and with a slow progressive motion from east to west. On such occasion there were probably not less than 300 individuals over an area of 20 acres, presenting a very pretty sight. Two specimens were secured.

Caprimulgus manillensis Wald.

Two females were secured in an old field.

Salangana whiteheadi Grant.

Swifts were observed on September 3, 1906, only, when two specimens of the above species were secured.

Cacomantis merulinus (Scop.).

Two specimens.

Eudynamis mindanensis (Linn.).

A male of August 27, 1906, is in nearly adult black plumage, but retains a few barred feathers on breast, flanks, and wing coverts.

Centropus viridis (Scop.).

Fairly common.

Centropus javanicus (Dumont).

Rare; one specimen.

Pitta atricapilla Less.

One male was taken August 23 and another August 27, 1906; the species appears to be rare in this island. It is known here as "wo-ha'."

Hirundo javanica Sparrm.

Fairly common.

Cyornis philippinensis Sharpe.

Rare; a male taken August 30, 1906.

Hypothymis occipitalis (Vig.).

Rare; one male taken.

Rhipidura nigritorquis Vig.

Abundant.

Lalage niger (Forster).

Abundant.

Iole guimarasensis Steere.

The fruit thrush of Bantayan belongs to the above variety. Its greater size, darker and less reddish throat and more pronounced shaft lines distinguish this bird from *Iole philippensis*. Five males from Bantayan collected in September, 1906, measure as follows: Wing, 4.06 to 4.18 (average 4.11); exposed culmen, 0.82 to 0.92 (average 0.88). Five males of *Iole philippensis*, collected at Toledo, Cebu in September and October, 1906, measure as follows: Wing, 4.00 to 4.09 (average 4.04); exposed culmen, 0.78 to 0.80 (average 0.79).

A female taken September 14, 1906, has nearly the entire forehead white, washed with pale yellow.

Copsychus mindanensis (Gm.).

Not uncommon; one specimen.

Pratincola caprata (Linn.).
Apparently rare; one female taken September 3, 1906.

Orthotomus castaneiceps Walden.
Extremely abundant; a fully grown bird of the year taken September 11, 1906, is dull green above and white below; the breast slightly gray; chestnut of adult plumage just showing around eye and a few gray plumes in neck. Adults do not differ from specimens collected in Masbate and Ticao. The native name is "tag-ua-ti'."

Cisticola exilis (Vig. & Horsf.).
This small grass warbler is probably the most abundant avian species on the island. A bird just from the nest was taken August 21, 1906.

Acanthopneuste borealis (Blas.).
The Northern willow warbler was very rare; a female was taken September 8, 1906, and another individual was seen a few days before.

Artamus leucorhynchus (Linn.).
Abundant.

Otomela lucionensis (Linn.).
The common shrike of the Philippines is known in Bantayan as "te-ti'-bi-as."

Cinnyris jugularis (Linn.).
Specimens of this species from Bantayan are slightly orange below the black breast. Abundant in coconut groves but no other species of *Nectariniidæ* was detected.

Anthus rufulus Vieill.
Fairly abundant; a male and a female were preserved.

Munia jagori Martens.
Not common.

Oriolus chinensis Linn.
Abundant. The native name is "tu-li-hao'."

Dicrurus mirabilis Wald. and Layard.
The ovary of a female taken August 28, 1906, contained a large egg and a young bird just able to fly was captured September 3, 1906. The adults taken do not differ from Ticao and Cebu specimens.

Sarcops melanonotus Grant.[2]
Not common; the single specimen preserved belongs to the above recently described variety.

Lamprocorax panayensis (Scop.).
Just before sunset on September 8, 1906, while looking for goatsuckers in an old cornfield, numbers of Panay starlings were noted flying in straight converging lines. The birds were in pairs or in flocks of from 3 to 30 individuals while near the close of the flight two flocks were estimated to contain 130 and 150 birds respectively. The average flock contained some 15 birds. Later investigation disclosed what I had expected to find, a night roost of these birds in a clump of bamboos and mangrove trees situated on the margin of a salt water swamp. In all 68 flocks were counted or estimated with a total of 1,059 birds, which was not over a third of the number actually reaching the roost.

Corone philippina (Bonap.).
Abundant.

[2] *Bull. B. O. C.* (1906), **16**, 100.

THE BIRDS OF BOHOL.

By Richard C. McGregor.

INTRODUCTION.

Bohol Island, 1,441 square miles in area, is nearly circular in outline and its coast is little broken by bays or inlets, but there are more than 60 small islands near it, mostly to the north and northwest. There are no mountains in Bohol, but sharpe ridges of old coral limestone are found in the vicinity of Sevilla and Guindulman. On these ridges grows the only forest in the island. If any extensive forest ever existed on level ground, it has long since been cut. I was told that in the interior there are large areas of rolling land covered with tall cogon grass.

The first list of Bohol birds is that published by Tweeddale [1] based on the collections made by Mr. A. H. Everett and his brother. The Everetts went to Talibon on the northern coast of Bohol and evidently found no suitable collecting ground. Tweeddale says:

> "Mr. Everett stopped for a week at Talibon, on the north coast of the island, and then left for Palawan while his brother proceeded to the interior of the island to collect. There he found a country covered with grass 12 feet high, and with no forest except on the tops of a few hills. Birds were scarce; and he had to return stricken with fever."

The collection made by the Everetts contained examples of 47 species. The next collectors to visit the island were members of the Steere Expedition, but they seem to have taken few birds. Worcester [2] states that Steere and his collector, Mateo Francisco, went to Bohol for corals; the 14 species listed for "Bojol" by Steere [3] are common forms and 7 of these were not contained in the Everett collection.

In March, 1906, Messrs. Celestino and Cantón, assistants in the Bureau of Science, were sent to Bohol and in May the author joined them at Tagbilaran, to find that valuable collections of birds had been made at Corella, Sevilla, and Balilijan, where small patches of forest had been found on steep coral rock hills. Collecting in the vicinity of Tagbilaran being practically useless because of the total lack of forest, we moved to Guindulman, where we found a small forested area on the top of a limestone ridge. The species collected here were much the same as those already obtained near Sevilla, but a number of important additions were made to our list.

[1] *Proc. Zoöl. Soc.* (1878), 708–712.

[2] The Philippine Islands and their people. New York (1898), 303.

[3] List Phil. Bds. Ann Arbor (1890), 5–27.

For the sake of completeness I have included in the present list all species recorded by Tweeddale and Steere as well as the 91 additional species obtained by us; the latter are indicated by an asterisk (*) following the name. I have also indicated the few species not seen by us and have given references to all the records by Tweeddale and by Steere. Five of the species appear to be new and are described as *Turnix celestinoi, Phapitreron albifrons, Otus boholensis, Zosterops læta,* and *Eudrepanis decorosa.*

Before giving the list of birds known from Bohol I will indicate briefly the evidence in favor of uniting this island with Samar-Leyte [4] rather than with Cebu. Worcester [5] has pointed out that the affinities of the Bohol faunæ are with Leyte and not with Cebu. The much greater amount of material now available fully confirms his opinion. I will first give a list of characteristic genera which, so far as known, have no representatives in Cebu, but which are now known from Bohol and from the islands east and south of it (Samar-Leyte, and Mindanao).

CHARACTERISTIC GENERA REPRESENTED IN BOHOL AND ABSENT FROM CEBU.

Hydrocorax.	*Zosterornis.*
Penelopides.	*Macronus.*
Pyrotrogon.	*Orthotomus.*
Chrysocolaptes.	*Eudrepanis.*
Rhinomyias.	*Arachnothera.*
Poliolophus.	

In addition to the striking difference shown by the above list is the evidence afforded by several genera common to the two islands, but having well-marked representative species.

GENERA COMMON TO CEBU AND BOHOL WITH THE REPRESENTATIVE SPECIES KNOWN FROM EACH ISLAND.

CEBU.	BOHOL.
Phapitreron frontalis.	*P. amethistina.*
Phapitreron nigrorum.	*P. albifrons.*
Loriculus chrysonotus.	*L. worcesteri.*
Yungipicus maculatus.	*Y. leytensis.*
Cryptolopha cebuensis.	*C. olivacea.*
Artamides cebuensis.	*A. kochi.*
Hyloterpe winchelli.	*H. apoensis.*
Zosterops everetti.	*Z. læta.*
Dicæum pallidior.	*D. cinereigulare.*
Prionochilus quadricolor.	*P. inexpectatus.*

[4] The differences between the birds of Samar and Leyte are so unimportant that for the purpose of this paper these islands are treated as one.

[5] *Proc. U. S. Nat. Mus.* Wash. (1898), **20,** 580.

The foregoing lists are sufficient to show the fundamental difference between the birds of Cebu and Bohol, while the following lists are calculated to indicate that Bohol is closely related to Samar-Leyte and less closely to Mindanao:

CHARACTERISTIC SPECIES FOUND IN BOHOL AND SAMAR-LEYTE.

Loriculus worcesteri.
Hydrocorax semigaliatus.
Penelopides samarensis.
Yungipicus leytensis.
Chrysocolaptes rufopunctatus.
Hypothymis samarensis.
Zosterornis nigricapitatus.
Orthotomus samarensis.

CHARACTERISTIC SPECIES FOUND IN BOHOL, SAMAR-LEYTE, AND MINDANAO.

Phapitreron amethystina.
Pyrotrogon ardens.
Centropus melanops.
Pitta steerei.
Artamides kochi.
Poliolophus urostictus.
Orthotomus frontalis.
Hyloterpe apoensis.
Rhabdornis minor.
Dicæum cinereigulare.
Prionochilus olivaceus.
Arachnothera philippinensis.
Dicrurus striatus.

LIST OF THE BIRDS OF BOHOL.

Gallus gallus (Linn.).*

The jungle fowl was abundant in the various localities visited; it is known to the natives as "ma-noc'-i-has'."

Turnix celestinoi McGregor.*

A single hemipode was killed on a grassy hill near Guindulman. The species was not observed in any other part of Bohol and it is probably rare as it seems to be unknown to the natives. This species is somewhat similar to *Turnix whiteheadi* but differs in being darker and having a larger bill and longer wing and tarsus.

Osmotreron vernans (Linn.).

Osmotreron vernans Tweeddale, Proc. Zool. Soc. (1878), 710.

The green "pu-nai" was abundant in all localities visited and was usually found feeding in shrubs.

Phapitreron amethystina Bp.*

Four examples of the amethyst dove, obtained at Sevilla, differ from two others taken near Manila in having the chin and throat slightly darker and more ruddy and the forehead darker. A female from Sevilla, taken March 23, has one of the longer under tail-coverts entirely white.

Phapitreron albifrons new species.

Phabotreron brevirostris Steere, List Phil. Bds. (1890), 24.

Specific characters.—Belonging to the small billed group of this genus but distinguished from all other known species by the white forehead and chin and the brown subocular line.

Type.—No. 11490, ♂, Bureau of Science Collection; Tagbilaran, Island of Bohol, P. I.; May 1, 1906; Celestino and Canton collectors.

Description of type.—General color brown, much darker above, with iridescent reflections most pronounced on nape, mantle, and breast; merging rather abruptly

into dark gray of crown; occiput, nape, and sides of head, ruddy-brown; from gape a narrow brown line passing below the eye with a wider white line underneath, both lines reaching beyond ear-coverts; chin, white, gradually changing to gray on throat and ochraceous on breast and abdomen; under tail-coverts and a wide band at end of tail, pale French gray; wings, uniform with the back; primaries, with a narrow light brown edge on outer web. With the bird held toward the light the occiput and nape are glossed with green, followed by a patch of metallic blue, this followed on interscapulars by a wide band of metallic green extending to sides of neck and narrowly bordered behind by blue; the wings and remaining upper parts have a dull green gloss; with the bird held away from the light the green changes to purple and this metallic color shows also on throat, breast and sides of neck. Length in flesh, 9.2 inches; wing, 4.80; tail, 3.20; culmen from base, 0.64; tarsus, 0.66.

This distinct species is most closely related to *Phapitreron brevirostris* of Mindanao, but its white forehead and brown subocular line distinguish it at once from all previously described species. Our first specimens were collected at Sevilla and Loboc and it was observed by the roadside daily during our journey from Tagbilaran to Guindulman; near the latter town it was often seen in company with *Osmotreron vernans* feeding in shrubs which grow in open country. It was found in forest as well, but was then more difficult to detect owing to its quiet habits and the protection of thick foliage. In this species the terminal half of bill is black; basal half of bill, skin around eyes, and feet, dull crimson; irides, brown; nails, gray. A hard shelled egg was taken from a female bird killed June 7 and another egg was obtained in the same way June 11. The latter egg measures 1.06 by 0.82 and is pure white in color. In Bohol this bird is called the "li-mû-con."

Leucotreron leclancheri (Bp.).*

Specimens of Leclancher's dove were taken at Tagbilaran and at Sevilla.

Muscadivora ænea (Linn.).*

The "baud" was not observed in abundance but a few specimens were taken at Sevilla and Guindulman.

[**Myristicivora bicolor** Scop.

Myristicivora bicolor Worcester and Bourns, Proc. U. S. Nat. Mus., **20**, 551, species No. 29; McGregor and Worcester, Hand-List Phil. Bds. (1906), 12.

In the papers quoted above, this species is given as being found in Bohol but I find no original record of the species from this island and it was not observed by us.]

Macropygia tenuirostris Bp.*

The slender-billed cuckoo dove was not uncommon. An example with several white primaries and secondaries in each wing was seen in flight but was not secured. One specimen was taken in Sevilla.

Streptopelia dussumieri (Temm.).

Turtur dussumieri Tweeddale, Proc. Zool. Soc. (1878); 711; Steere List Phil. Bds. (1890), 24.

The "tuc-mô" was abundant in shrubs and bamboo clumps about the borders of rice fields and grass lands.

Chalcophaps indica (Linn.).*

The Indian bronze-winged dove is known to the Boholanos as "ma-nâ-tad." Several specimens were collected.

Poliolimnas cinereus (Vieill.).*

This rail was obtained at Sevilla and at Guindulman.

Amaurornis olivacea (Meyen).*

This species was obtained at Tagbilaran and Guindulman. It is often seen in very dry localities and appears to be quite independent of marsh land.

Amaurornis phœnicura (Forster).*

No specimen of this species was obtained but it was seen several times and I have no hesitation in recording it as an inhabitant of Bohol.

Gallinula chloropus (Linn.).*

Three specimens in perfect plumage from Sevilla. This species is known to the natives of Bohol as "ca-rab' i-tu-mon'."

Gallicrex cinerea (Lath.).*

The "tu-yud'," was abundant near Guindulman where one was killed.

Porphyrio pulverulentus Temm.*

This odd species was seen many times before a specimen was obtained. It was found feeding in a very restricted area of old, flooded paddy near Guindulman. Here it was completely hidden from view until it took flight and plunged into a thick growth of grass some ten or twelve feet tall, where of course it was useless to follow it. When not aware of danger it walked about, searching for food among the matted aquatic plants, in the manner of the smaller rails. The tail was carried erect, but was frequently moved with a downward jerk, giving the bird an extremely nervous appearance. Live specimens are occasionally seen in the Manila markets and I am told that they are easily tamed, but become a nuisance to anyone owning chickens, as with their powerful beaks they kill all small chickens coming within their reach.

A female was taken June 20. Bill and irides red; legs reddish brown; nails gray. The native name of this species is "ca-rab' a-bu-hon'."

Podicipes philippinensis (Bonn.).*

Two specimens of the Philippine grebe were obtained near Sevilla where the species is known as "ga-mao'."

Sterna boreotis (Bangs).

Sterna bergii Tweeddale, Proc. Zool. Soc. (1878), 712.

Observed at Tagbilaran.

Arenaria interpres (Linn.).

Strepsilas interpres Tweeddale, Proc. Zool. Soc. (1878), 711.

Taken by Everett in northern Bohol; not seen by us.

Squatarola helvetica (Linn.).*

Two specimens of the black-bellied plover were taken at Tagbilaran, May 9.

Charadrius fulvus (Gm.).

Charadrius fulvus Tweeddale, Proc. Zool. Soc. (1878), 711.

Taken by Everett in northern Bohol; not seen by us.

Ochthodromus geoffroyi (Wagl.).

Eudromias geoffroyi Tweeddale, Proc. Zool. Soc. (1878), 711.

A pair from Tagbilaran, May 9. The male has put on the breeding dress while the female is still in the plain brown and white winter plumage.

Ochthodromus mongolus (Pall.).

Eudromias mongolus Tweeddale, Proc. Zool. Soc. (1878), 711.

Taken by Everett in northern Bohol; not seen by us.

Ægialitis dubia (Scop.).

Ægialitis dubia Tweeddale, Proc. Zool. Soc. (1878), 711.

Taken by Everett in northern Bohol; not seen by us.

Ægialitis peroni (Bp.).

Ægialitis peroni TWEEDDALE, Proc. Zool. Soc. (1878), 711.

Taken by Everett in northern Bohol; not seen by us.

Ægialitis alexandrina (Linn.).

Ægialitis cantiana TWEEDDALE, Proc. Zool. Soc. (1878), 711.

Ægialitis cantianus STEERE, List Philip. Bds. (1890), 25.

Not seen by us.

Numenius variegatus (Scop.).*

Tagbilaran, May 8, a male.

Numenius cyanopus Vieill.*

Tagbilaran, May 8. Male, length, 23 inches; wing, 11.5; culmen, 5.65; tarsus, 3.20. Female, length, 25 inches; wing, 12.00; culmen, 6.90; tarsus, 3.64.

Limosa novæ-zealandiæ Gray.

Limosa lapponica TWEEDDALE, Proc. Zool. Soc. (1878), 711.

Tagbilaran, May 8, five specimens.

Totanus eurhinus (Oberh.).*

A female from Tagbilaran, May 8. Measurements are here given of seven specimens in the Bureau of Science Collection.

Measurements of Totanus eurhinus.

Sex.	Locality.	Date.	Wing.	Tail.	Exposed culmen.	Tarsus.	Middle toe with claw.
♂	Cuyo	Jan. 12, 1903	6.25	2.40	1.80	1.92	1.34
♂	Cebu	Nov. 25, 1906	6.00	2.52	1.77	1.95	1.30
♀	Cuyo	Jan. 11, 1903	5.95	2.34	1.70	1.86	1.40
♀	do	do	6.40	2.45	1.88	1.98	1.31
♀	do	Jan. 12, 1903	6.20	2.60	1.80	1.80	1.26
♀	Bohol	May 8, 1906	6.00	2.46	1.76	2.04	1.32
♀	Cebu	Nov. 19, 1906	6.30	2.55	1.84	1.84	1.30

Helodromas ochropus (Linn.).*

Three specimens of the green sandpiper were taken at Sevilla, March 22 to April 16.

Heteractitis brevipes (Vieill.).

Totanus incanus TWEEDDALE, Proc. Zool. Soc. (1878), 711.

Five specimens in summer plumage from Tagbilaran, April 30, and four specimens in winter plumage, April 30 to May 9.

Actitis hypoleucus (Linn.).

Tringoides hypoleucos TWEEDDALE, Proc. Zool. Soc. (1878), 711.

Taken by Everett in northern Bohol; not seen by us.

Terekia cinerea (Güldenst.).

Terekia cinerea TWEEDDALE, Proc. Zool. Soc. (1878), 711.

Taken by Everett in northern Bohol; not seen by us.

Glottis nebularius (Gunn.).*

A pair from Tagbilaran, May 8. The male has assumed a large part of the summer dress while the female is still in winter plumage.

Rhyacophilus glareola (Gm.).

Rhyacophilus glarcola TWEEDDALE, Proc. Zool. Soc. (1878), 711.

Two specimens from Sevilla.

Limonites ruficollis (Pall.).

Tringa albescens TWEEDDALE, Proc. Zool. Soc. (1878), 712.

Two small sandpipers were killed on May 25 from a large flock which was feeding about a flooded salt works located a short distance east of Loay. These specimens are in nearly perfect summer plumage and agree with the description of the above species.

Limicola platyrhyncha (Temm.).

Limicola platyrhyncha TWEEDDALE, Proc. Zool. Soc. (1878), 712.

Collected by Everett in northern Bohol; not seen by us.

Gallinago gallinago (Linn.).

Gallinago scolopacina TWEEDDALE, Proc. Zool. Soc. (1878), 712.

Collected by Everett in northern Bohol; not seen by us.

Dissöura episcopus (Bodd.).

Melanopelargus episcopus STEERE, List Phil. Bds. (1890), 27. (Bojol.)

Bohol is omitted from the list of localities given for this species in McGregor and Worcester's Hand-list, p. 31. I did not observe the species in Bohol, but many of the natives told me of it, and Celestino, who is familiar with the species, did see it.

Pyrrherodias manillensis (Meyen).*

The Manila heron is well known to the natives as "la-paí." It was common in old flooded rice fields in the vicinity of Guindulman where an adult female was taken, June 3.

Ardea sumatrana Raffles.*

June 8 a trip was made to the town of Cogtang[6] on the west coast five miles from Guindulman for the purpose of visiting some small islands near there. The islands proved to be low and covered with a heavy growth of mangroves where, except *Cinnyris jugularis*, no land bird was seen. However, two specimens of the great slaty heron were killed from fish corrals where they had been sampling the catch. The species is known locally as "du-úng" and is said to appropriate a considerable number of fish. As the natives have no firearms, little or nothing can be done to prevent the depredations of the herons. The following data were taken from the two birds mentioned above. Male; iris, red; bill, black, lower mandible, yellow near tip, becoming white toward its base; legs and claws, blackish brown. Total length, 67.0 inches; wing, 19.30; tail, 7.25; tarsus, 6.70; culmen, 7.10. Female; length, 55.0; wing, 18.0; tail, 6.40; tarsus, 6.00; culmen, 6.45.

Mesophoyx intermedia Wagl.

Ardea intermedia STEERE, List. Philip. Birds (1890), 26 (Bojol).

Steere appears to be only person to have recorded this species for Bohol.

Egretta garzetta (Linn.).

Herodias garzetta TWEEDDALE, Proc. Zool. Soc. (1878), 712.

A female from Tagbilaran.

Demiegretta sacra (Gm.).

Ardea jugularis STEERE, List. Phi. Bds. (1890), 26.

The reef heron was fairly common near Guindulman and on tide flats between that town and Tagbilaran. The name "tá-bon" is sometimes used to designate this species but is usually applied to *Bubulcus coromandus* only.

[6] On a map I find the above spelling given but the natives certainly pronounced it Cug-túng. See *Atlas of the Philippine Islands*, U. S. Coast and Geodetic Survey, Special Pub., No. 3 (1900), map 23.

Nycticorax manillensis Vig.*

An adult specimen from Sevilla, March 19; not uncommon. The natives of Bohol are extremely afraid of a spirit which they call the "cuak cuak" and at night they carefully close doors and windows to shut it out. When the night herons fly over in the early evening uttering their weird call the natives say: "There is the 'cuak cuak,' be careful."

Butorides javanica (Horsf.).*

Abundant.

Bubulcus coromandus (Bodd.).

Bubulcus coromandus TWEEDDALE, Proc. Zool. Soc. (1878), 712.

Oates[7] in his description of the summer plumage of this species says: "The whole plumage white except the head, neck, breast and dorsal plumes which are rich golden buff." In Philippine specimens, however, the dorsal plumes are much lighter than the head and of a different color, being delicate vinaceous pink washed with brown. Sharpe[8] points out this difference in the following words: "The entire head, neck, throat, and fore-neck bright orange; the dorsal plumes of a distinct vinous sienna, with a golden tinge, the feathers of the fore-neck also tinged with the same color."

I have heard natives relate a number of fanciful tales respecting the nesting habits of this species; some aver that it does not lay eggs and other say that its nest is to be found only under the water. An egg of this species is reputed to bring the possessor good luck and the finding of a nest brings riches to the finder. The most elaborate story I have heard is current among Tagalogs and runs as follows:

The "ta-gâc ca-la-baó" builds its nest in high trees over water. The nest can only be seen by its reflection in the water. To secure an egg, supposing you have found a nest, climb the tree always looking at the aqueous image. In this way you may reach the nest and secure the eggs which confer upon the possessor the power of becoming invisible.

Several hundreds of these birds nested in a patch of giant grass near Guindulman. The nests examined were flat and 8 to 10 inches in diameter and were supported by grass stems at about 6 feet above the water. The natives rob this colony several times a year, but the eggs are a poor article of diet. From a large series obtained June 13, twenty eggs have been selected and measured; the length varies from 1.58 inches to 1.96 and the width varies from 1.20 to 1.39. Five eggs taken at randum measure: 1.86 by 1.38; 1.88 by 1.33; 1.82 by 1.25; 1.79 by 1.36; 1.61 by 1.20. In color the eggs are very pale blue. Hume[9] gives interesting notes on the nesting habits and Oates[10] describes and figures eggs of this species from India and Ceylon.

Ardetta cinnamomea (Gm.).*

A female from Guindulman, June 16.

Dendrocygna arcuata (Horsf.).

Dendrocygna vagans TWEEDDALE, Proc. Zool. Soc. (1878), 712.

The "ga-kít" occurs in small numbers at Sevilla, Guindulman and probably at other localities on the island where conditions are favorable.

Circus melanoleucus (Forster).* (Plate 1.)

An adult specimen of this fine marsh hawk from Sevilla.

[7] Bds. Brit. Burmah, London (1883), **2**, 251.
[8] Catalogue Bds. Brit. Mus. (1898), **26**, 218.
[9] Nests and Eggs Ind. Bds. (1890), **3**, 247.
[10] Cat. Eggs Brit. Mus. (1902) **2**, 130, pl. v., fig. 2.

Spilornis panayensis Steere.*

The Panay serpent-eagle is fairly abundant and is well known to the natives as the "si-cûb." Specimens were obtained at Sevilla and at Guindulman.

Butastur indicus (Gm.).

Butastur indicus Tweeddale, Proc. Zool. Soc. (1878), 709.

Collected by Everett in northern Bohol; not seen by us.

Haliaëtus leucogaster (Gm.).*

The white-bellied fish-eagle was often seen on the coast; one specimen was killed on a fish-corral at Guindulman.

Haliastur intermedius Gurney.

Haliastur intermedius Tweeddale, Proc. Zool. Soc. (1878), 709; Steere, List Philip. Bds. (1890), 7.

The "ba-nog" is common in Bohol.

Elanus hypoleucus Gould.*

A single specimen of this kite was obtained at Guindulman. Irides, light yellow; bill, black; cere, waxy-yellow; legs and feet, bright chrone-yellow; claws, black.

Microhierax erythrogenys (Vigors).*

One male specimen from Guindulman, June 7. Wing, 4.4 inches. As the inner webs of the primaries are barred with white this specimen can not be referred to *M. meridionalis* Grant, which has the inner webs of the primaries uniform black in both sexes, although the latter species is the one to be expected in Bohol.

Otus boholensis new species.*

Type.—♀, No. 11500, Bureau of Science Collection; Sevilla, Island of Bohol, P. I.; March 31, 1906; Celestino and Canton, collectors.

Description of type.—Crown, nape, and interscapular area, conspicuously blackish, the feathers sparingly vermiculated and notched with sandy buff; basal portion of a few feathers sandy buff forming a narrow and hidden nuchal band; forehead, whitish, the whitish marking continued as a wide band over each eye to tips of ear tufts on inner webs, outer webs, blackish spotted with fulvous, these white bands more or less broken by fine vermiculations of dark brown; loral plumes, whitish with blackish tips; ear-coverts, grayish shaded with fulvous and narrowly barred with dark brown, the hinder ear-coverts tipped with black forming a short band; side of neck, whitish with fine blackish cross lines and wide blackish tips to the feathers; behind ear-coverts an imperfect ruff of whitish feathers with wide terminal or subterminal black bars; chin, whitish; feathers of throat somewhat modified in continuation of the ruff; breast, sides, and abdomen, rufescent-cinnamon with fine vermiculations and irregular shaped median stripes of blackish-brown, each feather with one or two roundish spots of light buff on each web; under tail-coverts, light, sandy buff with a few wavy blackish lines near their tips; legs, sandy buff crossed with distinct, wavy, blackish lines; feathering of tarsi extending nearly to basal joints of toes; primaries, dark brown, the outer webs with large, clear and distinct spots of sandy buff, 6 in number on short first primary, and corresponding faint bars on inner webs; secondaries, dark brown with sandy buff bars which are somewhat obscured by darker vermiculations; the primary coverts resemble the secondaries and the first quill of alula is marked like the primaries; secondary coverts, scapulars and back, vermiculated with sandy buff, light buff, and blackish-brown and marked with large, irregular, blackish-brown spots; under wing-coverts, nearly white, inner ones uniform, the outer buff mottled with blackish; edge of wing, white; tail, dark

brown, mottled with sandy buff and with 7 or 8 poorly defined bars of sandy buff. Wing, 6.12 inches; tail, 3.22; tarsus, 1.18; culmen from base, 0.95; culmen from anterior margin of cere, 0.62; ear-tuft, 1.15.

This bird is clearly allied to *Strix lempiji* Horsfield and doubtless it is closely related to *Otus everetti* with which it should be compared. The type was the only individual observed.

Cacatua hæmaturopygia (P. L. S. Müller).*

The collection contains a specimen of the "a-bú-cay" from Sevilla and one from Guindulman in which localities it is not uncommon. From the vicinity of Tagbilaran it appears to be entirely absent.

Prioniturus discurus (Vieill.).*

This racket-tailed parrot was obtained at Sevilla and at Guindulman. Its native name is "ca-gác."

Tanygnathus lucionensis (Linn.).*

The "pi-cóy" occurs in all the forested areas but is not abundant.

Loriculus worcesteri Steere.

Loriculus hartlaubi? TWEEDDALE. Proc. Zool. Soc. (1878), 709.

Abundant in coconut groves near Guindulman. The species in Bohol is *L. worcesteri* not *L. apicalis*. Native name, "co-sí."

Eurystomus orientalis (Linn.).*

One specimen from Sevilla; the species was also observed near Guindulman.

Pelargopsis gigantea Walden.*

This large kingfisher was rare in the parts of the island visited by us. Two individuals were seen near the beach at Guindulman and a few were observed about fish corrals at the town of Cogtang. Two specimens were collected.

Alcedo bengalensis Briss.

Alcedo bengalensis TWEEDDALE, Proc. Zool. Soc. (1878), 709.

Rare; one specimen from Sevilla, March 19.

Halcyon gularis (Kuhl).*

The white-chinned kingfisher was not abundant but was obtained near Guindulman and at Sevilla.

Halcyon winchelli Sharpe.*

This species is represented by a single specimen taken near Guindulman on June 4.

Halcyon chloris (Bodd.).

Sauropatis chloris TWEEDDALE, Proc. Zool. Soc. (1878), 709.

The "ti-ca-ról" was abundant in coconut groves and bamboo clumps. Celestino collected eggs of this species at Tagbilaran, April 26.

Hydrocorax semigaliatus (Tweed.).*

This large hornbill was abundant near Sevilla but it was not seen in the vicinity of Tagbilaran. At Guindulman the "cau" was often heard calling in the forest a mile or two distant.

The natives say that the hornbill calls on the hour, from which arises its Spanish name, "reloj del monte." Of course the bird calls whenever it takes the notion to do so with no reference to the time of day.

A good series of both adult and young birds was secured. During May the adults were in almost perfect plumage but in June the old rectrices began to drop and the new, white tail feathers began to appear. In the adult the basal

part of bill is red; terminal half of upper mandible and two-thirds of lower mandible, white; irides, pale yellow, legs, dark red; nails, blackish-brown. In the young bird the bill is crestless and black with a light yellow tip; irides-brown; legs and feet, yellowish-brown; nails, blackish-brown.

The Bohol specimens agree with the description of *H. semigaliatus*.

Penelopides samarensis Steere.*

The "tau-si" occurs in the same areas as *Hydrocorax*. Bohol specimens agree with descriptions of *P. samarensis* and are doubtless of this species.

Merops americanus P. L. S. Müller.*

One specimen from near Tagbilaran was collected May 24.

Merops philippinus Linn.

Merops philippinus TWEEDDALE, Proc. Zool. Soc. (1878), 709.

Three specimens from Guindulman where this species was frequently seen.

Caprimulgus manillensis Walden.*

A specimen of the Manila goatsucker taken at Sevilla, April 24, does not differ from specimens collected in the islands of Mindoro and Luzon.

Salangana whiteheadi (Grant).*

A female was taken at Tagbilaran, May 12.

Salangana troglodytes Gray.*

This small species was fairly common in Bohol and was often seen in company with Salvadori's swift. The native names "bú-ta bûta," meaning a blind one and "sai-aû," meaning the dancer, are applied to both swifts and swallows without discrimination. It seems probable that the former name was originally used for the swifts as the word blind characterizes most aptly their dodging, erratic flight.

Salangana marginata (Salvad.).*

Salvadori's swift was not uncommon near Guindulman. On June 5 it was found breeding in a large cave and a nest examined at that time contained young which were about to fly. In Bohol no groups of nests were observed like those already described by me.[11]

Tachornis pallidior McGregor.*

The paler palm swift is the most interesting of our finds among the *Cypselidæ* of Bohol. It was first detected on June 18 when a few individuals were found feeding about a clump of bamboo not far from Guindulman. Specimens from Bohol do not differ from the type.

Pyrotrogon ardens (Temm.).*

The Philippine trogon was obtained at Sevilla and at Guindulman.

Hierococcyx fugax (Horsf.).*

One female specimen from Sevilla, taken March 23.

Cacomantis merulinus (Scop.).

Cacomantis merulinus TWEEDDALE, Proc. Zool. Soc. (1878), 709.

This common cuckoo was obtained in various localities.

Eudynamis mindanensis (Linn.).*

One specimen from Tagbilaran.

Centropus viridis (Scop.).

Centrococcyx viridis TWEEDDALE, Proc. Zool. Soc. (1878), 709.

[11] *Publications of the Bureau of Government Laboratories*, Manila (1905), 25, 14, Pl. 2.

Five specimens. A male from Tagbilaran, May 2, has a pure, white feather on the mantle and one wing feather partly white.

Centropus javanicus (Dumont).*

Four specimens from Sevilla and from Guindulman. This species has not been recorded from Bohol although so given in McGregor and Worcester's Hand-List.

Centropus melanops Lesson.*

The black-eyed cuckoo was abundant at Sevilla and at Guindulman.

Yungipicus leytensis Steere.*

This little woodpecker is represented by a single male specimen taken near Tagbilaran on April 27. In Bohol all species of woodpeckers are called "bá-toc."

Chrysocolaptes rufopunctatus Hargitt.*

Three males and three females were obtained in Bohol. Steere[12] describes *Chrysocolaptes samarensis* (= *C. rufopunctatus*) very aptly as "curiously intermediate between C. hæmatrebon and lucidus, having the back of one and the ventral surface of the other, but the crimson marking of the face separates it from either."

These three species are of nearly the same size but *rufopunctatus* has the heaviest and longest bill and *lucidus* has the shortest and most slender bill. *C. lucidus* is also distinguished by having the lower mandible light yellowish green, while in the two other species the bill is uniform black or blackish brown.

Thriponax pectoralis Tweed.*

Sevilla, April 17, one adult male in full plumage; Guindulman, May 30, and June 8, two adult males in worn plumage; June 2, one immature male in good plumage. In the three adult specimens a number of feathers on each side of the forebreast have narrow crimson tips.

Pitta erythrogaster Temm.*

The red-bellied pitta was observed at Guindulman only, where three specimens were taken in June.

Pitta atricapilla Lesson.*

The black-headed pitta was found to be abundant at all the points visited.

Pitta steerei Sharpe.*

An adult male of Steere's pitta was taken at Sevilla, April 17, an adult female was killed the next day, and a slightly immature female was taken April 7. At Guindulman but one bird was seen, a female, taken June 6.

Hirundo gutturalis Scop.*

Four immature birds from Sevilla, March 22.

Hirundo javanica Sparrm.

Hirundo javanica TWEEDDALE, Proc. Zool. Soc. (1878), 709.

A male and a female from Tagbilaran, April 25; a nest containing three heavily incubated eggs was found July 11. The nest was plastered to the roof of a small waveworn cave. The eggs are white, dotted with reddish and blackish brown, and a few under shell markings of lavender. The eggs measure 0.70 by 0.49; 0.70 by 0.49; 0.69 by 0.49.

Hirundo striolata Boie.*

This attractive swallow was first observed in Bohol by Celestino, who saw several individuals at Loboc on the Loay River; at Valencia, May 26, one specimen was killed near the church and the next day two were killed at Garcia Hernandez.

[12] List. Phil. Birds (1890), 8.

At Jagna the species was abundant in front of the church and several specimens were taken. On our arrival at Guindulman, May 28, an incomplete nest of the mosque swallow was found on a rafter under the town hall. The nest was composed of mud with a thick lining of grass stems and bamboo shavings, upon which were arranged a great number of chicken feathers. Three fresh eggs were taken from this nest June 11; they are slender and rather sharply pointed at the smaller end; their respective measurements in inches are 0.89 by 0.58; 0.88 by 0.56; 0.90 by 0.58.

June 5 a small nesting colony of mosque swallows was found in a wide-mouthed cave near Guindulman. About a dozen nests were plastered against the overhanging rock wall and 20 feet or so above the floor of the cave, making it a matter of great difficulty to secure the eggs unbroken. The mud nests were lined with grass stems, coconut-tree bark, and other plant fibers, as well as with feathers, among which those of *Artamides* and the domestic fowl were recognized. Two eggs obtained by means of an improvised bamboo ladder were heavily incubated and measure 0.92 by 0.61 and 0.90 by 0.61, respectively. All of the eggs of *Hirundo striolata* taken by me were pure white and unspotted.

Hemichelidon griseisticta (Swinh.).*

Two specimens from Sevilla, April 3 and 19, respectively.

Cyornis philippinensis Sharpe.*

Abundant.

Hypothymis occipitalis (Vigors).

Hypothymis azurea STEERE, List Phil. Bds. (1890), 16.

This pretty blue flycatcher is represented in the collection by two males and a female.

Hypothymis samarensis Steere.*

A male and two females from Sevilla.

Rhinomyias ruficauda (Sharpe).*

Four specimens collected are immature. Sevilla, March 20, April 9 and 13; Guindulman, June 12. These are in every way similar to adult birds from Basilan (December and January) but lores and side of head are more or less washed with fulvescent brown like the pileum. In the male taken April 9 the greater coverts are tipped with light fulvous which character also seems to be one of immaturity.

Abrornis olivacea Moseley.*

One male from Sevilla, March 21; two males, June 2 and 11 and a female, May 30 from Guindulman. The female was nesting.

Rhipidura nigritorquis Vigors.

Leucocerca nigritorquis TWEEDDALE, Proc. Zool. Soc. (1878), 709.

The native name for this common flycatcher is "'ca-la-mang-tí-gon."

Artamides kochi Kutter.*

A female from Sevilla, March 23 and a male from Guindulman, June 12.

Lalage niger (Forster).

Lalage dominica TWEEDDALE, Proc. Zool. Soc. (1878), 709.

Abundant.

Iole philippensis (Gm.).

Iole philippinensis STEERE, List. Phil. Bds. (1890), 19.

The Philippine fruit-thrush, which is very abundant in Bohol, is called "tug-bi-á."

Poliolophus urostictus (Salvad.).*

Eight specimens from various localities in Bohol.

Pycnonotus goiavier (Scop.).

Ixus goiavier TWEEDDALE, Proc. Zool. Soc. (1878), 710.

Pycnonotus goiavier STEERE, List. Phil. Bds. (1890), 19.

A nest of this species was found at Guindulman on May 30; it was situated in a bunch of tall grass in a river bed and contained two eggs.

Zosterornis nigrocapitata (Steere).*

A male and two females of the genus *Zosterornis*, taken at Sevilla, April 18, are referred to the above species.

Macronus mindanensis Steere.*

In the vicinity of Tagbilaran this species and the representative tailor-bird (*Orthotomus frontalis*) occur in great abundance. In low brush, in bamboo along roads, and in uncultivated land, even within town, these two species are always to be found and often in company. The *Macronus* is not a shy bird and is constantly busy searching for food in the lower parts of shrubs and among rank growths of weeds. Specimens from Bohol agree in size and coloration with specimens taken by Clemens in the Lake Lanao region, Mindanao.

Copsychus mindanensis (Gm.).*

Abundant.

Pratincola caprata (Linn.).

Pratincola caprata TWEEDDALE, Proc. Zool. Soc. (1878), 710.

Apparently rare; a male from Sevilla, March 8 and a female from Guindulman, May 30.

Locustella ochotensis (Midd.).*

One specimen from Guindulman, May 29.

Acrocephalus orientalis (Temm. & Schl.).*

Several specimens of a reed warbler found breeding near Guindulman are similar to *Acrocephalus orientalis* but seem to be quite distinct from the common form found in the Philippines and they may represent a local resident race. However, owing to my slight acquaintance with this family I do not at present feel justified in giving the bird a name.

Dr. Chas. W. Richmond has kindly examined these specimens and writes that they are correctly named "as our knowledge of them stands at present. I judge from the dates that the species breeds in the Philippines, but it winters there also, and probably during the winter you will find not only resident birds but northern migrants, possibly associated together. If you can prove the resident birds to be smaller (I doubt if any color differences can be made out) than the migrants it may be desirable to recognize them by name."

Orthotomus frontalis Sharpe.

Orthotomus frontalis TWEEDDALE, Proc. Zool. Soc. (1878), 710.

Very abundant in all parts of the island visited. At Tagbilaran the species was particularly noticeable, being one of the commonest species observed. In a young bird from Tagbilaran, May 4, the forehead and area about eyes are gray like the crown, the back and wings are less green than in the adult, and the lower parts are pure white.

Orthotomus samarensis Steere.*

A male specimen of the rare Samar tailor-bird secured at Sevilla, April 5 does not differ from a specimen taken by Dr. Mearns in Samar.

Cisticola cisticola (Temm.).

Cisticola cursitans TWEEDDALE, Proc. Zool. Soc. (1878), 710.

I include this species on the authority of Tweeddale as above, but no specimen was taken by us.

Cisticola exilis (Vig. and Horsf.).*

Four male specimens from Bohol agree with Sharpe's description of *Cisticola exilis* in breeding plumage and must be referred to that species. The native name is "pí-rot."

Megalurus palustris Horsf.*

Fairly abundant in all localities visited by us. An immature male in yellowish plumage was taken near Guindulman, June 16.

Megalurus ruficeps Tweed.

Megalurus ruficeps STEERE, List Phil. Bds. (1890), 20.

A male from Sevilla, April 2.

Acanthopneuste borealis (Blas.).*

One specimen of the northern willow warbler from Tagbilaran, May 4.

Artamus leucorhynchus (Linn.).

Artamus leucorhynchus TWEEDDALE, Proc. Zool. Soc. (1878), 709.

The swallow shrike is known to the Boholanos as "it-it."

Cephalophoneus nasutus (Scop.).

Lanius nasutus TWEEDDALE, Proc. Zool. Soc. (1878), 709.

Very abundant; almost invariably found perched near the top of bamboo clumps.

Otomela lucionensis (Linn.).

Lanius lucionensis TWEEDDALE, Proc. Zool. Soc. (1878), 709.

The four specimens collected, March 29 to April 24, are typical examples of *O. lucionensis*.

Hyloterpe apoensis Mearns.*

Grant [13] in reporting on a collection of birds from Mindanao includes the thickhead of Samar, Leyte, Dinagat, and Basilan with the species recently described from Mount Apo, Mindanao. Eleven specimens from various localities in Bohol agree in every way with a male in the Bureau of Science collection which was taken on Mount Apo by Mearns. Between *Hyloterpe apoensis* and *H. philippinensis* the most obvious differences are the longer bill and duller green back of the latter species.

Rhabdornis minor Grant.*

This species is very distinct from *R. mystacalis*, having a much shorter bill. The species was found in some abundance at Sevilla and at Guindulman. Specimens from Bohol and from Basilan do not differ.

Zosterops læta, sp. nov.*

Specific characters.—Similar to *Zosterops basilanica* Steere but more yellowish above and the forehead and ear-coverts brighter; from *Zosterops everetti* Tweeddale it differs in lacking a black line under the eye and in having a much wider median, abdominal, yellow streak.

Type.—No. 5407, ♂, Bureau of Science Collection; Guindulman, Island of Bohol, Philippines; June 21, 1906; McGregor, Celestino, and Canton, collectors.

[13] On the Birds collected by Mr. Walter Goodfellow on the Volcano of Apo and in its vicinity, in Southeast Mindanao, Philippine Islands: *Ibis* (1906), **6**, 475.

Description of type.—Above, bright yellowish-green, brighter and more yellowish on forehead and tail coverts; top of head a little brighter than back; wings and tail, blackish-brown edged with yellowish-green; edge of wing, sulphur-yellow; wing lining washed with yellow; a circle of silky white feathers about eye; no dusky spot on lores and no dark line under eye; entire side of head, yellow like the crown; below, sulphur-yellow, except sides of breast and sides of abdomen which are ashy-gray, lighter next the wide, median, yellow stripe. Lenght, 4.7 inches; wing, 2.36; tail, 1.70; tarsus, 0.64; exposed culmen, 0.40.

The female is scarcely different from the male.

This species was found in abundance at Sevilla and at Guindulman. While of the same style of coloration as *Z. everetti* and *Z. basilanica* the present species is quite distinct from either.

Dicæum papuense (Gm.).*

This common species was abundant in all parts of Bohol. A young male taken June 25 is dull blackish-brown above and pale gray below with no red in center of breast. A nest containing three fresh eggs was taken near Guindulman, June 18. The nest is 3½ inches in length with a diameter of 2 inches; it is cylindrical in form with the opening at the top and side. The materials are small bits of leaves fastened together by means of spider web. The eggs are palest blue with small spots and points of lilac and light brown scattered over the surface, but the markings are most numerous on the larger end; in one egg the spots are larger and form a wreath near the larger end. The eggs are very short and blunt but not equal ended. They measure 0.58 by 0.46; 0.57 by 0.47; 0.51 by 0.46.

Dicæum everetti Tweed.*

Three male birds taken at Sevilla, April 5 to 18, are probably of the above species but they require comparison with specimens from other islands.

Dicæum cinereigulare Tweed.*

A fine series of orange-breasted flowerpeckers from Guindulman are very satisfactorily identified as of the above species, but unfortunately no typical specimens are at hand for comparison.

Dicæum pygmæum (Kittlitz).*

Very abundant.

Prionochilus olivaceus Tweed.*

A female bird taken at Sevilla, April 7, differs in no way from a specimen taken in Basilan and undoubtedly belongs to the above species.

Prionochilus inexpectatus Hartert.*

A male from Guindulman, June 4, agrees closely with Hartert's description of this species[14] and is similar to a specimen from Mariveles. The above male was the only individual of the species seen in Bohol.

Eudrepanis decorosa, sp. nov.*

Specific characters.—This species differs from *Eudrepanis pulcherrima* (Sharpe) and from *E. jefferyi* Grant in being much paler below, in wanting the red breast patch which is represented by a few red spots only, and in having the wing-coverts, tail, and upper tail-coverts metallic blue instead of metallic green.

Type.—No. 5255, ♂, Bureau of Science Collection; Guindulman, Island of Bohol, P. I.; June 4, 1906; McGregor, Celestino, and Canton, collectors.

Description of type.—Forehead back to opposite center of eye, metallic blue mixed with violet; crown, neck, sides of neck and mantle, dark green; rump, pale

[14] *Nov. Zool.* (1895), **2**, 64.

yellow; lores, velvety black; jaw, cheeks, and ear-coverts, metallic blue; chin, throat, and breast, pale yellow, reduced to a light yellow wash on abdomen, flanks, and under tail-coverts; middle of breast, marked with a few small spots of scarlet; wings, black; primaries bordered with white on inner webs and with no metallic color; all the wing-coverts and the secondaries widely margined with metallic blue, mixed with a little dark metallic green; tail, black, upper tail coverts and edges of retrices, metallic blue mixed with dark metallic green. Bill, legs, and claws black. Length in flesh, 3.8 inches; wing, 1.90; tail, 0.97 culmen from base, 0.72; tarsus, 0.55.

Female.—No. 11409, Bureau of Science Collection; Sevilla, Island of Bohol, P. I.; March 23, 1906; Celestino and Canton, collectors.

Differs from the female of *Eudrepanis jefferyi* in having the rump patch much lighter yellow. Upper parts, including wings, olive-green; top of head, mixed with dark gray; rump pale yellow; retrices, blackish with margins of dark, metallic green; chin, throat, breast, face, and sides of neck, whitish with a slightly streaked appearance from the dusky shaft lines; rest of lower parts, very pale yellow. Length in flesh, 3.5 inches; wing, 1.72; tail, 0.88; culmen from base, 0.72; tarsus, 0.51.

Eudrapanis pulcherrima was described as an *Æthopyga*[15] with the suggestion that it was probably generically distinct. The type locality is Basilan and the species is represented in the Bureau of Science collection by two males taken near Isabela, Basilan, January 16 and 28, 1907. In 1894 Grant[16] described a second species from Benguet Province, Luzon, as *Eudrepanis jefferyi* with the following characters: "The patch of metallic feathers behind the eye is steel-blue instead of green; the outer webs of the secondaries and scapulars are widely margined with *metallic* green, not olive-green; and the scarlet patch on the middle of the upper breast is more conspicuous."

A series, some 20 specimens, of this species was obtained by me at Irisan, Benguet, in April, May, and June, 1903. The most important of the characters assigned seems to be the metallic green of the secondaries but the size of the scarlet breast patch varies in specimens from the same locality and in the series before me it does not differ in the two species. In *E. decorosa* the patch is absent and represented by a few scarlet dots. I may note that the feathers forming the patch are red, with rather wide yellow tips, so that the patch always appears broken; the feathers are not edged with red as stated by Gadow.[17] I have stated that the yellow of throat and breast in *Eudrepanis jefferyi* and *Æthopyga rubrinota* is of about the same shade; in *Eudrepanis decorosa* the yellow is much paler, about as in *Æthopyga shelleyi.* Specimens of this very distinct species of sun-bird were obtained at Sevilla in March and at Guindulman in June.

Cinnyris sperata (Linn.).*

Several specimens from Guindulman and Tagbilaran.

Cinnyris jugularis (Linn.).

Cyrtostomus jugularis Tweeddale, Proc. Zool. Soc. (1878), 710.

This sun-bird was abundant in all parts of Bohol and as usual was found feeding in coconut trees as well as in forest and among the trees growing along rivers which make up the general tangle known as "mangle." The native name is "tam-si." In the series of males collected there is considerable variation in the color of the breast ranging from pure yellow to bright orange.

[15] Sharpe: *Nature* (1876), **14**, 297.
[16] *Bull. Brit. Ornith. Club* (1894), **3**, 50; *Ibis* (1894), 513.
[17] Cat. Bds. Brit. Mus. (1884), **9**, 31.

Arachnothera flammifera Tweed.*

The flame-tufted spider-hunter was observed at Sevilla only, where four males were taken, March 27 to April 18.

Motacilla melanope Pall.*

A specimen from Sevilla, April 5.

Budytes leucostriatus Hom.

Budytes viridis Tweeddale, Proc. Zool. Soc. (1878), 710.

Taken by Everett in northern Bohol; not seen by us.

Anthus rufulus Vieill.

Corydalla lugubris Tweeddale, Proc. Zool. Soc. (1878), 710.

Anthus rufulus Steere, List Phil. Bds. (1890), 21.

Abundant in all suitable localities.

Anthus gustavi Swinh.*

This species was observed at Sevilla only, where a male and two females were taken in March.

Alauda wattersi Swinh.

Alauda wattersi Tweeddale, Proc. Zool. Soc. (1878), 710.

A male, probably breeding, was killed on a grassy plain near Guindulman, June 8.

Munia jagori Martens.

Munia jagori Tweeddale, Proc. Zool. Soc. (1878), 710.

Munia atricapilla Steere, List Phil. Bds. (1890), 23.

The "ma-ja" (English sound of j) occurs in great numbers and after the nesting season congregates in flocks when it inflicts much damage on standing rice. With a load of number 12 shot, 29 birds were killed from a small flock without causing any apparent decrease in its size; the larger flocks must contain several hundred individuals.

Uroloncha everetti (Tweed.).*

Rare in the localities visited by us; one specimen from Sevilla and another from Guindulman.

Oriolus chinensis Linn.

Broderipus acrorhynchus Tweeddale, Proc. Zool. Soc. (1878), 710.

At Tagbilaran and Sevilla the name "tu-li-haó" is applied to this species, while in Guindulman it is better known as "da-mud-laó," and the latter name was heard at Garcia Hernandez.

Dicrurus striatus Tweed.*

Abundant in all suitable localities. Two young, each 8 inches in length, from Sevilla, April 8, differ from the adult in having top of head dead black and under parts dark smoky brown with no gloss. A somewhat larger young bird (9.2 inches) was taken at Guindulman, June 1.

Sarcops melanonotus Grant.*

Sarcops calvus McGregor and Worcester, Hand-list Philippine Birds (1906), 109 (part).

Sarcops melanonotus Grant, Ibis (1906), ser. 8, **6**, 469.

Birds from Bohol belong to the newly described race *Sarcops melanonotus* Grant, yet some individuals from that island are scarcely to be distinguished from true *S. calvus*. The two races of bald starlings present somewhat the same difficulty as do *Cinnyris aurora* and *C. jugularis*, there being islands in which the birds seem to be intermediate between the well-marked extremes. In certain

islands not all the individuals can be referred to one race so that we have seemingly two varieties and birds intermediate between them existing in one restricted area. The dimensions of *Sarcops* vary considerably and appear to afford no means of distinguishing between the two races.

Measurements of Sarcops calvus, five males, and Sarcops melanonotus, ten males, showing extremes.

Species.	Wing.	Tail.	Bill from nostril.	Tarsus.
Sarcops calvus	4.83 to 5.18	4.20 to 4.70	0.77 to 0.90	1.06 to 1.25
Sarcops melanonotus	5.00 to 5.35	4.28 to 4.97	0.76 to 0.87	1.14 to 1.24

Lamprocorax panayensis (Scop.).

Calornis panayensis TWEEDDALE, Proc. Zool. Soc (1878), 710.

The Panay starling flourishes in great numbers under the native name of "ga-lang-si-ang'"; in Tagbilaran several dozen were nesting in the roof of the provincial government building and at Guindulman four individuals spent their time in carrying nesting materials into the end of the bamboos on the roof of a town house. June 15 a colony of several pairs was discovered in the crevices of a small, coral-rock island. The only accessible nest contained three full-grown young which left the nest when disturbed. One of these ended his flight in the water and was immediately picked up by a watchful *Haliastur*.

Corone philippina (Bp.).

Corvus philippinus TWEEDDALE, Proc. Zool. Soc. (1878), 710.

The Philippine crow occurs in Bohol in its usual abundance and one example from Tagbilaran was preserved. "Uak" is the only native name I have ever heard for the crow and that is the name used in Bohol.

ILLUSTRATION.

PLATE I. Circus melanoleucus (Forster). From a living bird taken near Manila. Photograph by Charles Martin.

Photograph by Charles Martin, from a living bird.

PLATE I. CIRCUS MELANOLEUCUS.

THE BIRDS OF BATAN, CAMIGUIN, Y'AMI, AND BABUYAN CLARO, ISLANDS NORTH OF LUZON.

By Richard C. McGregor.

INTRODUCTION.

The results of the study of a second collection of birds from some of the small islands north of Luzon are presented in this paper. In 1903 the author and his assistant visited Fuga and Calayan in the Babuyan group and secured a number of interesting species.[1] In May, 1907, through the courtesy of Major-General Leonard Wood, we were able to reach the more remote Island of Batan. From May 27 to June 16 collections were made on this island. On June 1 Governor-General Smith visited Batan in the steamer *Polillo,* and as temporary members of his party we spent a short time on Y'Ami June 17, and a few hours on Babuyan Claro June 18. On June 19 we landed at Port San Pio, Camiguin, where we remained until July 21 when we left for Aparri by native sailboat.[2]

Batan, the largest and most important of the Batanes group, is 24 square miles in area and is situated some 125 miles north from Cape Engaño on the Luzon coast. Its surface is broken by several groups of low mountains; the highest peak is Mount Iraya, 3,800 feet. This island is swept for nine months of the year by strong winds and typhoons, which prevent the growth of trees except in the protection of deep gulches. A great variety of resident birds was not expected nor found but several of the species are of great interest. It is worthy of note that such ubiquitous Philippine species as *Corone philippina, Oriolus chinensis, Sarcops calvus* and *Pycnonotus goiavier* are wanting, while the families Psittacidæ, Picidæ, Dicæidæ, Nectariniidæ and others are unrepresented. *Sphenocercus australis* and *Macropygia phœa* are found in both Batan and Calayan while *Zosterops batanis* and *Hypsipetes batanensis* are representatives of species found in Calayan. However, nothing like either *Centropus carpenteri* or *Terpsiphone nigra* is known from Calayan.

[1] See *Bull. Philippine Mus.* (1904), 4, 1–34.

[2] Mr. A. Celestino, assistant collector, and Mr. E. Fenix, botanist, were with me on this entire trip, Mr. H. G. Ferguson, geologist, Bureau of Science, visited these islands at the same time. Reports on the geology and botany of Camiguin and Batan will appear in a later number of the Journal.

Camiguin, while more mountainous than Batan, is for the most part heavily wooded and it seemed reasonable to expect a much greater number of species than were found. Camiguin has an area of 61 square miles and is about 25 miles distant from Cape Engaño. Its avian fauna bears a resemblance to that of Calayan in the presence of *Cinnyris whiteheadi, Pardaliparus edithæ,* and *Sphenocercus australis,* but its *Zosterops* is not of the *meyeni* group and the new flycatcher, *Camiguinia personata,* is not represented in Calayan by any related species. The common Philippine crow, *Corone philippina,* does not occur in Camiguin.

Two species of swift, *Cypselus pacificus* (Lath.), from Batan and Camiguin and *Cypselus subfurcatus* Blyth from Camiguin are new to the list of Philippine birds. One genus and seven species are here described as new as follows:

Sphenocercus australis, Batan, Calayan, Camiguin.
Terpsiphone nigra, Batan, Y'Ami.
Camiguinia, new genus, Camiguin.
Camiguinia personata, Camiguin.
Hypsipetes camiguinensis, Camiguin.
Hyloterpe illex, Camiguin.
Zosterops batanis, Batan.
Zosterops meyleri, Camiguin.

THE BIRDS OF BATAN.

Excalfactoria lineata (Scop.).

A pair killed in a field of young sugar cane on June 5.

Sphenocercus australis sp. nov.

This species is not abundant on Batan; the few specimens obtained do not differ materially from those taken in Calayan and Camiguin. The native name is "a-ri-da-uang."

Leucotreron leclancheri (Bp.)

Not common; an adult male was taken May 31.

Columba griseigularis (Wald. and Lay.).

Large numbers of this dove are taken by means of birdlime and sold to persons visiting the island. The local name of the species is "ba-duc'." An adult example taken by us does not differ greatly from specimens from other islands. Length 17.0 inches. Base of bill, eyelids, and bare space around eyes, deep rose-pink; tip of bill very pale-yellow; irides, yellow; feet, dark-rose, leaden-gray between the scales; nails, pale-yellow.

Macropygia phæa McGregor.

A male was taken May 29. Length, 16.5 inches. Tip of bill, brown, basal part dull-red; legs, bright-rose; nails, gray; irides, double ringed, inner ring pale-blue, outer light reddish with black line between the two rings. A nest and egg were found half way up Mount Iraya on June 12. The nest was a slight platform of twigs placed ten feet from the ground in a dwarfed and twisted tree. The slightly incubated egg measured 1.45 by 1.05; it is pure white and unspotted.

Chalcophaps indica (Linn.).

I believe no specimen of this dove was killed but it was seen several times at close range.

Amaurornis olivacea (Meyen).

Two specimens taken; the species is known as "ba-hu-goc'."

Charadrius fulvus (Gm.).

Seen but once, on May 29, when an individual was flushed near the town of Basco.

Ochthodromus geoffroyi (Wagl.).

A male and a female in summer plumage were taken May 29.

Ochthodromus mongolus (Pall.).

A female in summer plumage was taken May 29.

Heteractitis brevipes (Vieill.).

An individual was seen June 14 near the town of Ibana.

Actitis hypoleucus (Linn.).

Seen in the town of Basco only.

Heteropygia acuminata (Horsf.).

A female taken May 29 had the ovaries somewhat enlarged. Bill, blackish but lighter at base; legs, dull-green; nails, black. Culmen, 0.92; wing, 5.12; tail, 2.15; tarsus, 1.12; middle toe with claw, 1.10.

Demiegretta sacra (Gm.).

A solitary bird was seen June 14 near the town of Ibana.

Butorides javanica (Horsf.).

One was seen near Ibana on June 14.

Bubulcus coromandus (Bodd.).

A small flock was noted.

Sula sula (Linn.).

Numbers observed a short distance off shore but none was killed.

Haliaëtus leucogaster (Gm.).

A few noted near the beach.

Strix candida (Tick.).

A female was taken June 2.

Alcedo bengalensis Briss.

Very rare; seen but once.

Halcyon chloris (Bodd.).

Rare, found in woods only.

Salangana whiteheadi (Grant).

A female taken June 8 was the only individual of the genus noted. This may be the recently described *Collocalia unicolor amelis*.[3]

Cypselus pacificus (Lath.).

Micropus pacificus HARTERT, Cat. Bds. Brit. Mus. (1892), **16**, 448.

When we landed at Santo Domingo de Basco, May 27, this swift was abundant, feeding low over and about buildings. The species was rarely seen again until June 2 when a few specimens were taken in the town. They usually appeared

[3] See Oberholser, *Proc. Phil. Acad. Sci.* (1906), 193.

after a heavy rain, doubtless following the swarms of winged ants and termites. The mouths of specimens killed were crammed with these insects. When we climbed Mount Iraya, June 12, its summit was covered with clouds, and large flocks of swifts were feeding above the summit and at 200 to 300 feet lower.

Cuculus canorus Linn.

A female was taken June 2. Irides, clay color with inner dark ring; eyelids, yellow; legs, nails and corners of mouth, yellow; middle toe nail dusky; bill, black above, dark-green below. Length, 11.5 inches.

Centropus carpenteri Mearns.

This species is nearly identical with *C. mindorensis*. I find no constant difference in color and the difference in size is slight and variable. It is remarkable that two species, so nearly related have such widely separated habitats.

Measurements of Centropus mindorensis and C. carpenteri.

Sex.	Locality.	Date.	Wing.	Culmen from base.	Depth of bill at front of nostril.
♂	Mindoro	Mar. 16, 1905	6.14	1.15	0.50
♂	do	Apr. 2, 1905	6.25	1.17	.46
♀	do	Nov. 22, 1902	7.28	1.22	.54
♀	do	Apr. 1, 1905	7.20	1.36	.52
♀	do	Apr. 8, 1905	6.90	1.22	.55
♂	Batan	June 7, 1907	6.68	1.28	.55
♀	do	May 30, 1907	7.26	1.40	.58
♀	do	June 1, 1907	7.48	1.32	.58
♀	do	do	7.66	1.50	.58
♀	do	do	7.25	1.36	.58

Centropus javanicus (Dumont).

A female taken May 28. Native name is "tu-la-cuc'."

Hirundo javanica Sparr.

Fairly abundant, one male taken May 29.

Hirundo striolata (Boie).

On June 14 some 100 pairs of the mosque swallow were found nesting in a wave-worn tunnel near San Carlos, Batan Island. The nests were bottle shaped and composed of mud. A few birds of this species were usually seen in company with *Cypselus pacificus*.

Terpsiphone nigra sp. nov. (Pls. I, II, and III.)

Type.—No. 6395, ♂ adult; Bureau of Science Collection; Batan Island, Batanes, Philippines; May 30, 1907; R. C. McGregor and A. Celestino collectors.

Description.—Black with a slight, purplish, blue gloss; middle of abdomen, white; under tail-coverts, black with white bases and traces of clay-brown along edges; wings and tail, black with some purplish-blue gloss on exposed margins. Irides brown; bill, legs, and wide fleshy eye-wattle, bright blue; nails, paler blue; inside of mouth, pale-green. Total length in flesh, 15.1 inches; wing, 3.58; central rectrices, 11.1; second pair of rectrices, 5.17; outermost and shortest pair of rectrices, 2.95; culmen from base, 0.75; bill from nostril, 0.50; tarsus, 0.60; middle toe with claw, 0.60; longest crest feathers about, 0.60.

The above-described specimen seems to represent the male of this species in fully adult plumage.

Nearly adult male.—No. 6411, Bureau of Science Collection; Batan Island; June 1, 1907; McGregor and Celestino.

Description.—Similar to the preceding but some feathers of lower back and a few of the inner remiges edged with chestnut; middle of lower breast, axillaries, and lining of wing, mottled with white; abdomen, white; under tail-coverts, terra-cotta-yellow with small, dusky patches. Total length in flesh, 14.8 inches; wing, 3.56; tail-feathers: longest, 10.5; second, 5.0; shortest, 3.15; culmen from base, 0.74; bill from nostril, 0.5; tarsus, 0.65; middle toe with claw, 0.65; longest crest feathers, 0.64.

Adult male first year.—No. 6372, Bureau of Science Collection; Batan Island; May 29, 1907; McGregor and Celestino collectors.

Description.—Head, neck, throat, and breast, glossy-black; mantle, back, and rump, bright-chestnut; upper tail coverts, chestnut and glossy-black (mixed plumage); lower breast, gray; abdomen, white; flanks dull chestnut; under tail-coverts, white washed with terra-cotta; alula, primaries, and primary coverts, blackish-brown; primaries and secondary coverts edged with chestnut; secondaries edged with rusty brown; rectrices, dark-brown, slightly chestnut; outer pair minutely tipped with white. Length, 7.5 inches; wing, 3.34; tail, 3.36; outermost rectrices, 2.82; culmen from base, 0.73; bill from nostril, 0.50.

Adult female.—No. 6494, Bureau of Science Collection; Batan Island; June 10, 1907; McGregor and Celestino.

Description.—Differs from the adult male, first year, in having mantle, back, tail-coverts, and secondary coverts reddish-brown instead of chestnut. Length, 7.5 inches; wing, 3.37; tail, 3.44; outermost rectrices, 2.92; culmen from base, 0.78; bill from nostril, 0.50. Another female (No. 6496) is duller, having the mantle, back, and rump decidedly grayer. Length, 7.4 inches; wing, 3.34; tail, 3.48; culmen from base, 0.66; bill from nostril, 0.46.

First plumage.—No. 6394 ♀; Bureau of Science Collection; Batan Island; May 30, 1907; McGregor and Celestino.

Description.—Above, dull-brown; top of head, back, and tail, dull reddish-brown; post ocular band dull-ocherous; chin, throat, and breast, gray, the latter crossed by an ocherous band; lower breast, abdomen, and under tail-coverts, white, slightly washed with ocherous; wings, blackish, primaries edged with dull reddish-brown; primary coverts blackish, secondaries and secondary coverts edged with dull rusty-ocherous taking the form of terminal spots on median coverts. Bill, dull-brownish; legs, pale-blue; nails, white.

Apparently this species breeds in its second year but does not reach its most perfect plumage until its fourth year.

A nest of this species found May 29 was saddled securely in a fork of a small branch. The single egg was heavily incubated. It measures 0.61 by 0.80. In color the egg is dull-white, sparsely spotted with dark umber-brown.

This species is abundant in Batan and several birds may be found in each patch of forest. A pair, or a pair and two to four young birds, may be seen feeding together. The adult male is usually fearless, often alighting within a few feet of the intruder. The flight is easy and graceful, but slow because of the long rectrices. The call is harsh and cat-like; the song is simple and of limited range, consisting of several clear notes uttered in quick succession. The native name of the species is "ti-uay-uay'."

This species seems to be closely related to *Tchitrea corvinà* E. Newton from Seychelles. It also agrees with the meager description of *Callaeops periopthalmica* Grant;[4] the latter, however, has no lengthened central rectrices and the type may be a young bird.

[4] Grant: *Bull. B. O. C.* (1895), **4**, 18; *Ibis* (1895), **1**, 253.

Whitehead gives the following notes on the type of *Callaeops periopthalmica* Grant:

"The unique type of this interesting Paradise Flycatcher was purchased by me in Manila. It had been shot by an Indian [Filipino] and left with the bird stuffer, unclaimed for years. I had expressed the desire to purchase this bird, but could not prevail upon the Indian to part with it, until one afternoon, much to my delight the man brought it to me, and I purchased it. The soft parts were stated by my hunter (who skinned the bird) to have been pale blue, as in *Zeocephus rufus*, which is probably quite correct. That this genus finds its nearest allies in *Arses* is, I think, open to doubt. It more resembles *Terpsiphone*, from which genus it differs in wanting a lengthened pair of center tail-feathers, which are found only on apparently very old males. * * * The crest is also like that of *Terpsiphone*, and not the short velvety-pile-like plumes of *Arses*." [5]

The man from whom Whitehead secured the type has seen our series of Batan birds and says that *Callaeops* was just like the adult male without the long central tail-feathers. He also states that the type of *Callaeops* was killed with a blow gun at Malabon, near Manila.

The facts that the type of *Callaeops periopthalmica* has remained unique and that it was killed in a region entirely unsuited to birds of this kind incline me to think that it was taken far from its normal range and that possibly it was a straggler from Batan. The identification of the Batan bird by this native as being the same species as one seen by him some ten years ago is of little value. Everything considered, to treat the Batan bird as a new species seems better than to refer it to any previously described form.

Hypsipetes batanensis Mearns.

Mearns states that in *H. batanensis* the forehead is rufescent instead of cinereous, but among 18 specimens from Batan I can detect no indication of a rufescent forehead nor can I find any other difference in plumage between them and typical *fugensis*. Birds of this genus from Batan are larger than those from Calayan and Fuga and apparently the species *H. batanensis* must stand on that character alone.

The Batan bulbul is very abundant and is known to the natives as "pi-uc'." A set of eggs, two slightly incubated and one addled, was collected May 29. The color of the eggs is pale salmon-pink obscured by longitudinal spots of umber-brown; there are also some obscure, deep, shell markings. These eggs measure: 1.21 by 0.82; 1.20 by 0.79; 1.19 by 0.81.

Another set of nearly fresh eggs was taken June 3. The shell is faintly pink and heavily spotted with rich umber brown but the spots less elongate than in first set. These eggs measure: 1.25 by 0.86; 1.29 by 0.87; 1.21 by 0.83.

Petrophila manilla Bodd.

A few seen about the town; a female was taken May 29.

Locustella ochotensis (Midd.).

This species and the *Acrocephalus* were rather abundant for a short time; specimens were taken May 29 and 31.

Locustella faciolata (Gray).

One male in adult plumage was collected May 29.

Acrocephalus orientalis (Temm. and Schl.).

Three specimens were taken May 30.

[5] Whitehead: *Ibis* (1899), 5, 108.

Cisticola cisticola (Temm.).

Two males from Batan, May 20 and June 14 are, I believe, of this species and the birds collected by me on Fuga and Calayan in 1903 seem to be *C. cisticola* and not *C. exilis* as recorded. This bird is fairly abundant in Batan where it is well known as "gug-nas'."

Zosterops batanis sp. nov.

Bonaparte's name *Zosterops meyeni* is based on *Dicæum flavum* of Kittlitz the locality of which is given as "Luzon." In default of a more exact locality I shall consider that specimens coming from Manila and its vicinity represent *Zosterops meyeni*.

Typical specimen.—No. 4296, ♂ adult; Bureau of Science Collection; Malate, Manila, P. I.; April 27, 1904; McGregor, Celestino, and Canton.

Description of Zosterops meyeni.—Above, including wings and tail, olive-yellow, brighter on forehead and tail-coverts; narrow ring of feathers about eye, silky-white; below this slightly dusky; lores, bright olive-yellow; chin, throat, forebreast, and under tail-coverts, bright yellow; center of breast and abdomen, faintly washed with yellow. Total length 4.0 inches: wing, 2.05; tail, 1.48; exposed culmen, 0.40; tarsus, 0.66; middle toe with claw, 0.54.

Zosterops batanis sp. nov.

No. 6357, ♂ adult; Bureau of Science Collection; Batan Island, Batanes, P. I.; May 28, 1907; McGregor and Celestino.

Specific characters.—Similar to *Zosterops meyeni* but much larger, the forehead brighter and more extensively yellow.

Description of type.—Above, yellowish-green or light olive-yellow; brighter on crown, rump, and upper tail-coverts; lores and frontal band, bright-yellow; eye surrounded by a ring of silky, white feathers, interrupted in front by a small, dusky spot; an indistinct, dusky line below eye circle; auriculars and sides of neck, light yellowish-green, like crown; chin, throat, breast, and lower tail-coverts, bright yellow, like forehead; a faint yellow wash down middle of breast and abdomen; wing-coverts, olive-yellow, like back, quills blackish and, except first primary, edged with olive-yellow; inner webs margined with white; edge of wing, light yellow; axillaries and wing lining, white, faintly washed with yellow; rectrices blackish, edged with olive-yellow. Upper mandible black, lower mandible and legs, leaden-blue; nails brown; irides, light brown. Length, 5.0 inches; wing, 2.30; tail, 1.73; exposed culmen, 0.48; tarsus, 0.72; middle toe with claw, 0.64.

Cotype.—No. 6390, ♀ adult; Bureau of Science Collection; Batan Island, Batanes, P. I.; May 30, 1907; McGregor and Celestino.

Description.—The female is similar to the male. Wing, 2.20; tail, 1.60; exposed culmen, 0.46; tarsus, 0.72; middle toe with claw, 0.61.

Measurements of five males of Zosterops batanis.

Date.	Wing.	Tail.	Exposed culmen.	Tarsus.
May 28	2.30	1.66	0.45	0.72
June 5	2.27	1.66	.46	.68
June 9	2.27	1.64	.50	.73
June 10	2.28	1.67	.49	.71
June 11	2.28	1.69	.49	.70

This species is fairly abundant in Batan Island where it is known to natives by the name "da-ti-û."

A nest containing four fresh eggs was taken June 1. The nest, compactly made of plant fibers, was situated in the fork of a small tree; its inside diameter in 2.5 inches, inside depth 1.3. The eggs are pale blue and unmarked; they measure 0.65 by 0.48; 0.67 by 0.49; 0.69 by 0.51; 0.69 by 0.50. Two nests containing young birds were found on June 5.

Budytes leucostriatus (Hom.).

One male in yellow plumage was taken May 28. The native name of this species is "du-uad'."

Anthus rufulus Vieill.

Abundant and nesting on grassy hill sides. The native name is "bu-chi-bu-chid'."

Munia jagori Martens.

Four immature birds taken May 30 are probably of this species.

Lamprocorax panayensis (Scop.).

An immature female, killed June 3, was the only representative of the species seen.

THE BIRDS OF CAMIGUIN.

Megapodius cumingi Dillw.

One adult female was killed July 13 and a young bird was killed July 21; the latter was perched on a small limb some six feet above the ground. Fresh eggs were obtained during our stay on Camiguin.

Gallus gallus (Linn.).

One chick about five weeks of age was seen June 25 and a half-grown bird was killed July 17. The species is a common one on this island.

Sphenocercus australis sp. nov.

This species is nearly related to *S. formosæ*, but the maroon of the shoulders is continued across the back in a wide band. The entire bill is blue, the hard tip being paler while in *S. formosæ* the apical third is said to be "pale with a tinge of yellowish."

Type.—No. 6548 ♂, Bureau of Science Collection; Camiguin Island, Cagayan Province, Philippines; June 20, 1907; R. C. McGregor and A. Celestino, collectors.

Distribution.—Islands of Camiguin, Calayan, and Batan, north of Luzon.

Description of type.—General color above, olive-green; crown, ocherous-buff; forehead, lighter and more yellowish; upper mantle grayish-green; below, yellowish-green; middle of abdomen, yellowish white; flanks striped with white, pale-yellow, and dark-green; under tail-coverts, slightly washed with buff; lesser wing coverts, maroon, connected across the back by a wide and distinct band of the same color; alula and primary coverts and primaries black; secondaries black, with narrow, yellow margins; greater coverts, dark green with wider yellow margins; median coverts dark green; tail, above, olive-green, below, black with gray tips. Inner ring of iris, light-blue, outer ring pale-pink; bill blue, the hard tip paler than the base; legs and feet old rose; nails gray. Length in flesh 19.5 inches; wing, 7.60; tail, 5.40; exposed culmen, 0.82; tarsus, 1.07; middle toe with claw, 1.57.

Cotype.—No. 6633 ♀; Bureau of Science Collection; Camiguin Island, Cagayan Province, Philippines; July 5, 1907; R. C. McGregor and A. Celestino, collectors.

Description.—Similar to the male but uniform dark green above with no ocherous color on head and no maroon on wings and mantle. Length in flesh, 14 inches; wing, 7.60; tail, 5.16; exposed culmen, 0.80; tarsus, 1.04; middle toe with claw, 1.52.

The specimens from Calayan recorded as *Sphenocercus formosæ*[6] must be referred to this new species.

Leucotreron leclancheri (Bp.).

Specimens from Batan and Camiguin average larger than examples from more southern islands, but there is a great variation in series. This species was found in abundance on Camiguin. The nest is a slight platform of small twigs placed on a horizontal branch, at from six to fifteen feet from the ground. The four nests found contained but one egg each. Two eggs taken July 3 measure respectively 1.39 by 0.92 and 1.40 by 0.97. Another egg taken July 18 measures 1.24 by 0.95. These three eggs were slightly incubated. An egg in advanced stage of incubation was taken June 25.

Muscadivora nuchalis (Cab.).

The balud of Camiguin is provisionally referred to the above species.

Chalcophaps indica (Linn.).

Fairly abundant.

Hypotænidia torquata (Linn.).

Apparently rare; one individual killed.

Orthorhamphus magnirostris (Vieill.).

Two seen on the beach June 22; one male killed. Bill black, its basal skin dull-yellow; legs pale-yellow, shading into pale-lead-blue on feet; nails black. Stomach contained remains of beach crabs.

Nycticorax manillensis Vig.

A few specimens of the Manila night heron were observed on the small island opposite the town.

Butorides javanica (Horsf.).

Rare.

Dendrocygna arcuata (Horsf.).

A small flock of this species was found on the island opposite the town.

Haliaetus leucogaster (Gm.).

Rare.

Falco perigrinus Tunst.

A female in dark plumage was taken June 24. Length in flesh, 19 inches. Irides brown; bill black at tip, plumbeous at base, cere paler; nails black. One other individual was seen.

Ninox japonica (Temm. and Schl.).

Abundant and apparently breeding. Four specimens, two adults and two full-grown young, were taken June 22.

Eurystomus orientalis (Linn.).

Rare.

Halcyon coromandus (Lath.).

A female in perfect plumage was taken July 13. Irides brown; bill, legs, and nails, bright coral-red. The stomach contained a small crab.

[6] *Bull. Philippine Mus.* (1904), 4, 9.

Halcyon chloris (Bodd.).

A young female with banded breast was taken July 6. On one occasion a kingfisher was observed to dart down and strike a half-grown chicken in the head, causing its death within half an hour.

Salangana marginata (Salvad.).

This little swift was very abundant.

Cypselus pacificus (Lath.). (Pls. IV and V, fig. 1.)

This fine bird was often seen near the beach but seldom within gunshot. A few specimens were killed.

Cypselus subfurcatus Blyth. (Pls. IV and V, fig. 2.)

Micropus subfurcatus HARTERT, Cat. Birds Brit. Mus. (1892), **16**, 457.

A male swift, taken June 26 in company with birds of the preceding species, belongs with little doubt to the above, which is new to the list of Philippine birds.

Eudynamis mindanensis (Linn.).

A male and two females were taken. Although abundant, this species was rarely seen.

Centropus viridis (Scop.).

Abundant; a very small, young bird was taken July 2.

Pitta erythrogaster Temm.

Very abundant.

Hirundo javanica Sparr.

Abundant.

Hirundo striolata (Boie).

This swallow was often seen in considerable numbers in company with *Cypselus pacificus* and I have but little doubt that it breeds on Camiguin, as specimens killed were young of the year.

Camiguinia, new genus of Muscicapidæ.

Type.—Camiguinia personata, sp. nov.

Generic characters.—First primary little more than half of second; fifth, longest, fourth and sixth, a trifle shorter; tail about equal to wing and slightly graduated; bill moderately flattened as in *Cyanomyias;* culmen less than tarsus and equal to middle toe with claw; rictal bristles, longer than bill from nostril; feathers of chin, lores, and forehead, short, soft, and pile like; feathers of crown, more or less scale like; occipital crest short and full.

This genus differs from *Cyanomyias* in lacking the greatly lengthened crest and the antrorse loral plumes and differs from *Hypothymis* in having the feathers of crown and crest scale-like, instead of soft and velvety.

Camiguinia personata, sp. nov.

Type.—No. 6541, ♂ adult, Bureau of Science Collection; Camiguin Island, Cagayan Province, Philippines; June 20, 1907; R. C. McGregor and A. Celestino. Length in flesh 6.1 inches; wing, 2.66; tail, 2.65; culmen from base, 0.58; bill from nostril, 0.34; tarsus, 0.65.

Description.—General color, light azure-blue; rump and upper tail coverts lighter; breast darker, frontal line, chin, lores, and a narrow, circumocular line, velvety-black, forming a mask which is narrowly bordered behind with bright, silvery, cobalt-blue, widest behind forehead and chin; middle of lower breast, abdomen, under tail coverts, wing lining, and axillaries, white; wings and tail, black, the exposed edges dark azure-blue, except first and second primaries; two

outer rectrices narrowly tipped with white (in old birds only). Irides brown; the narrow eyelids light-blue; bill blue, except edges and tip which are black; legs and feet blue; nails blackish.

In a slightly immature, but fully feathered male (No. 6594, June 28, 1907) the crest is less developed, the feathers of the crown are less scale like, and the upper parts are darker blue than in the fully adult male.

Adult female.—No. 6621, Bureau of Science Collection; Camiguin Island; July 3, 1907; McGregor and Celestino.

Description.—General color, dull verditer-blue, head, neck, and sides of head brighter; forehead, dull-cobalt; chin, whitish, bordered by dull cobalt; throat, breast, and sides grayish, washed with dull azure-blue, shafts white; abdomen, flanks, under tail-coverts, and middle of lower breast, white; wings and tail, blackish-brown, edged with dull verditer-blue. Wing, 2.53; tail, 2.52; culmen from base, 0.56; bill from nostril, 0.34; tarsus, 0.66.

Young in first plumage.—No. 6566, ♀, Bureau of Science Collection; Camiguin Island; June 25, 1907; McGregor and Celestino.

Description.—Above, smoky-gray; below, white; a dusky band across fore breast; wings and tail, blackish-brown; primaries and secondaries edged with verditer; outer webs of rectrices washed with verditer.

This species is abundant in Camiguin and its habits are similar to those of *Hypothymis*. The song is extremely simple, consisting of a high note repeated six or seven times in rapid succession. The alarm note is low and harsh.

Hypsipetes camiguinensis sp. nov.

Specific characters.—Similar to *Hypsipetes fugensis* Grant and to *Hypsipetes batanensis* Mearns but larger; bill and tail longer; flanks less rufescent.

Type.—No. 6586, ♂ adult in worn plumage; Bureau of Science Collection; Camiguin Island, P. I.; June 28, 1907; R. C. McGregor and A. Celestino, collectors. Total length in flesh, 11.6 inches; wing, 5.34; tail, 4.87; culmen from base, 1.31; bill from anterior margin of nostril, 0.82; tarsus, 0.99.

Remarks.—The specimens of *Hypsipetes* obtained in Camiguin Island are in such poor condition that it is impossible to give color characters, but it is believed that adults in good plumage will be found to differ considerably from the other two species mentioned. The following table contains measurements of the three species of the genus occurring in the Babuyanes and Batanes.

Measurements of male specimens of Hypsipetes.

Species.	Locality.	Date.	Wing.	Tail.	Culmen from base.	Bill from nostril.	Tarsus.
H. fugensis	Fuga	Sept. 2	4.87	4.73	1.10	0.65	0.75
Do	do	Aug. 27	4.95	4.85	1.07	.65	.87
Do	do	Aug. 28	4.95	4.85	1.15	.72	.85
Do	do	Aug. 29	4.83	4.55	1.12	.67	.90
Do	do	Aug. 31	4.84	4.67	1.11	.68	.83
H. batanensis	Batan	May 28	5.10	4.62	1.24	.74	.88
Do	do	do	5.10	4.73	1.25	.77	.95
Do	do	do	4.90	4.57	1.28	.76	.95
Do	do	May 31	4.95	4.71	1.17	.70	.97
Do	do	June 9	5.04	4.85	1.27	.76	.95
Do	Babuyan Claro	June 18	4.90	4.67	1.22	.75	.92
Do	do	do	4.84	4.68	1.23	.75	.88
H. camiguinensis	Camiguin	June 28	5.08	5.00	1.36	.84	.91
Do	do	do	5.34	4.87	1.31	.82	.99

Cisticola cisticola (Temm.).

Fairly abundant.

Hyloterpe illex sp. nov.

Specific characters.—Similar to *H. fallax* of Calayan Island, but larger; breast and sides more strongly suffused with yellow.

Type.—No. 6573 ♂ adult; Bureau of Science Collection; Camiguin Island, P. I.; June 27, 1907; R. C. McGregor and A. Celestino. Length, 7.2 inches; wing, 3.62; tail, 2.93; exposed culmen, 0.62; tarsus, 0.92.

Remarks.—While closely related to *H. fallax* this species differs in its greater size; the greater length of wing is especially noticeable. The yellow on the breast extends forward for a greater distance than in *H. fallax*. This new species was not uncommon in the forest on Camiguin, but most of the specimens secured were in poor plumage.

Measurements of Hyloterpe fallax and H. illex, male specimens.

Species.	Locality.	Date.	Wing.	Tail.	Exposed culmen.	Tarsus.
H. fallax	Calayan	Sept. 19	3.18	2.62	0.57	0.85
Do	do	Oct. 4	3.21	2.74	.60	.86
Do	do	Oct. 6	3.25	2.80	.57	.86
Do	do	Dec. 9	3.19	2.60	.60	.83
H. illex	Camiguin	June 20	3.40	2.89	.64	.88
Do	do	June 27	3.62	2.93	.62	.92
Do	do	do	3.64	2.91	.64	.92
Do	do	June 28	3.64	2.92	.64	.90

Pardaliparus edithæ McGregor.

Fairly common. A number of specimens taken are mostly young birds. The only adult male obtained is similar to the type from Calayan.

Zosterops meyleri, sp. nov.

Specific characters.—Similar to *Zosterops aureiloris* Grant, but bill longer, forehead brighter yellow, and circle of white feathers about eye much wider.

Type.—No. 6561, ♂ in breeding plumage; Bureau of Science Collection; Camiguin Island, P. I.; June 25, 1907; R. C. McGregor and A. Celestino.

Description.—Above, bright olive-yellow, lighter on rump; forehead, golden-yellow; ear-coverts and side of neck like the back; a wide circle of short, silky, white feathers about eye, bordered below by a dusky line; lores, rich golden-yellow; below, bright-yellow; side, slightly dusky; wing, and tail, olive-green like the back. Irides, brown; bill black, but basal two-thirds of lower mandible leaden-blue; legs and nails flesh. Total length, 4.5 inches; wing, 2.10; tail, 1.57; bill from nostril, 0.32; tarsus 0.66.

Cotype.—No. 6672, ♀ adult, Bureau of Science Collection; Camiguin Island, P. I.; July 11, 1907; McGregor and Celestino. In color similar to the male. Total length, 4.3 inches; wing, 2.08; tail, 1.50; bill from nostril, 0.32; exposed culmen, 0.43; tarsus, 0.65.

Remarks.—This species belongs to the section of the genus having the lower parts all bright yellow and including *Z. aureiloris, luzonica, richmondi,* etc., but it may be recognized at once by its very wide white eye-circle. In color it is like *Z. richmondi* from Cagayancillo but it lacks the black line under eye. The species is named for Mr. John Meyler, the only American inhabitant of Camiguin Island.

Dicæum papuense (Gm.).

This species, the only representative of its family in Camiguin, was seldom observed. An adult male was taken June 27 and a young male July 8.

Cinnyris whiteheadi Grant.

Fairly abundant; specimens from Camiguin differ in no way from specimens taken in other islands.

Budytes leucostriatus (Hom.).

The only specimen seen was a male killed June 27. This individual had lost his left leg and had been unable to migrate.

Anthus rufulus Vieill.

Fairly abundant on a flat near the town.

Uroloncha everetti Tweed.

Specimens were taken June 2 and 28; abundant in the vicinity of newly planted rice fields.

Oriolus chinensis (Linn.).

Abundant.

Lamprocorax panayensis (Scop.).

A few pairs were nesting in dead trees near the town.

Y'AMI.

Y'Ami, the most northern of the Philippine Islands, is a mass of broken rock covered with a thick growth of grass, vines, and stunted, twisted trees. During half an hour spent ashore here on the morning of June 17 an immature male specimen of *Haliaetus leucogaster* (Gm.), and a male, in worn plumage, of *Zosterops batanis* McGregor were killed. In addition four species were observed of which no specimens were taken. These species are: *Halcyon chloris* (Bodd.), *Terpsiphone nigra* McGregor, *Hypsipetes batanensis* Mearns, and *Petrophila manilla* (Bodd.).

BABUYAN CLARO.

In a short time spent on the volcanic island of Babuyan Claro, June 18, specimens of *Hypsipetes batanensis* Mearns and *Salangana marginata* (Salvad.) were collected and *Cinnyris whiteheadi* Grant, *Hirundo javanica Sparrm.*, and *Corone philippina* (Bp.) were identified.

ILLUSTRATIONS.

PLATE I. *Terpsiphone nigra* sp. nov. adult male.
II. *Terpsiphone nigra*, adult female.
III. *Terpsiphone nigra*, young.
IV. Fig. 1, *Cypselus pacificus* (Lath.); fig. 2. *Cypselus subfurcatus* Blyth.
V. Fig. 1, *Cypselus pacificus* (Lath.); fig. 2. *Cypselus subfurcatus* Blyth.

PLATE I. TERPSIPHONE NIGRA McGREGOR. (No. 6422, ♂ ADULT.)

PLATE II. TERPSIPHONE NIGRA McGREGOR. (No. 6495, ♀ ADULT.)

PLATE III. TERPSIPHONE NIGRA. (No. 6413, ♂ HORNOTINE.

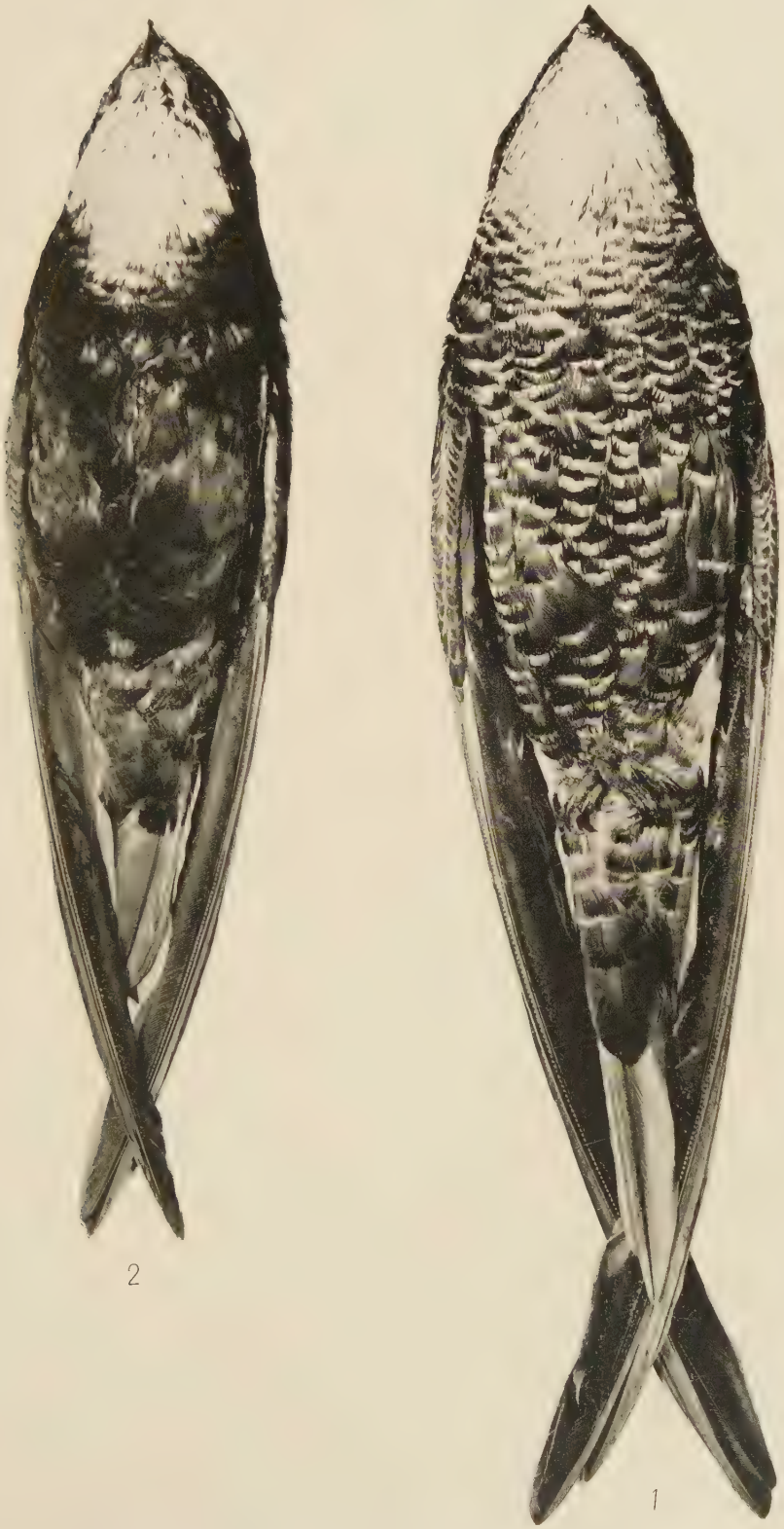

Plate IV. 1, CYPSELUS PACIFICUS; 2, C. SUBFURCATUS. (SLIGHTLY REDUCED VENTRAL VIEW.)

2

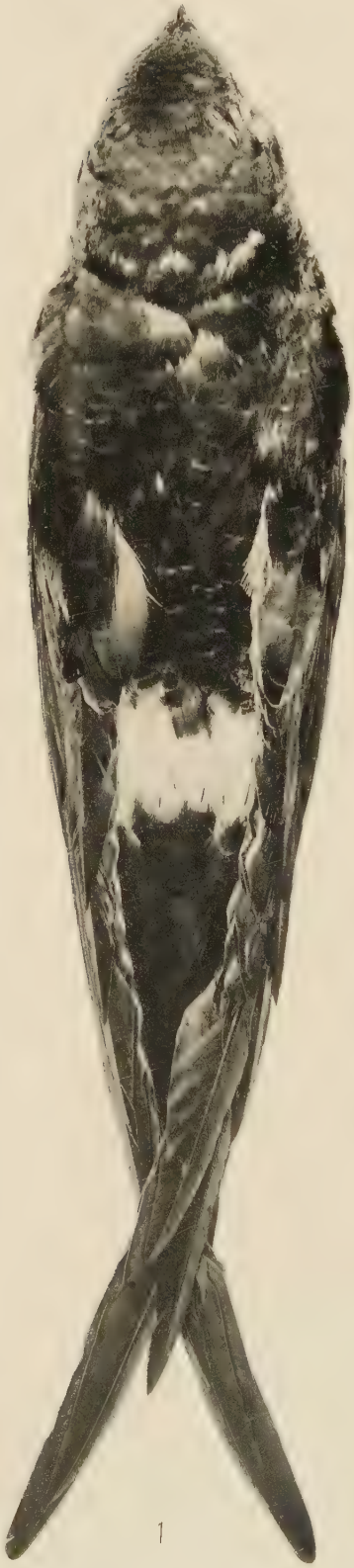

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Plate V. 1, CYPSELUS PACIFICUS; 2, C. SUBFURCATUS. (SLIGHTLY REDUCED DORSAL VIEW.)

TWO ADDITIONS TO THE AVIFAUNA OF THE PHILIPPINES.

By Edgar A. Mearns.
(*Major and Surgeon, U. S. Army.*)

Butorides spodiogaster (Sharpe).

On a nameless islet in Malampaya Sound off the Island of Palawan, I shot an adult female of this heron, September 12, 1906. This specimen is No. 14319 of the author's collection.

Spodiopsar cineraceus (Temminck).

At Laoag, Ilocos Norte Province, Luzon, January 25, 1907, I shot a male of the Chinese gray starling. The bird was alone and shy. The specimen is No. 14776, author's collection.

DESCRIPTIONS OF A NEW GENUS AND NINE NEW SPECIES OF PHILIPPINE BIRDS.

By Edgar A. Mearns.
(*Major and Surgeon, U. S. Army.*)

Since the publication of several papers on Philippine birds in the Proceedings of the Biological Society of Washington, in the year 1905, I have continued my explorations in the Philippine Islands, with the result that several new forms have been added to the Philippine avifauna, some of which are described in the present paper.

In identifying my birds I have had the use of the personal library of Commissioner Dean C. Worcester; and I am indebted to Dr. Paul C. Freer and Mr. Richard C. McGregor for every facility afforded by the collections and library of the Bureau of Science, in Manila. For opportunities of making expeditions in the field, I am deeply grateful to Major-General Leonard Wood and Brigadier-General Tasker H. Bliss, United States Army, under whom I have served.

All measurements given in this paper are in millimeters.

Malindangia, new genus of **Campophagidæ.**

Type.—*Malindangia mcgregori*, sp. nov.

Characters.—Wing and tail about equal; wing-feathers as in *Edoliisoma*, 3d 4th, and 5th quills longest; tail, forked, 4th quill longest, 3d subequal, outer quill shortest; webs of outer pair of rectrices sharply pointed. In form and pattern the tail resembles that of *Campochæra*, but has the webs more pointed. Bill with culmen decidedly shorter than tarsus; narrower, at gape, than length of outer toe (without claw). Stiffened shafts of rump-feathers very pronounced.

Malindangia mcgregori, sp. nov.

McGregor's cuckoo-shrike.

Type.—No. 14178, Mearns collection. Adult male from Mount Bliss, Malindang group (altitude 5,750 feet), northwestern Mindanao, Philippine Islands, May 20, 1906.

Geographical distribution.—Peaks of Mount Malindang, northwestern Mindanao, from 4,000 to 9,000 feet.

Adult male and female.—Upper parts, including crown, mantle, rump, upper tail-coverts, and middle pair of tail-feathers, uniform light gray; forehead, chin, throat, breast, and sides of head to above eyes, black; innermost secondaries, scapulars, and least wing-coverts, gray like the back; middle and greater wing-coverts, and a broad external band on innermost pair of secondaries, white; remaining wing-quills black externally, broadly white on inner webs at base; bastard wing all black; axillars and under wing-coverts white; three outer rectrices tipped with grayish-white on both webs, the innermost of the three nar-

rowly, the next broadly, and the outermost for more than one-third of its length; chest, flanks, and thighs, gray like the back, this color fading to whitish on the abdomen and becoming pure white on the under tail-coverts. Iris, red or reddish-brown; bill all black; feet, plumbeous-black, with under side of toes yellow.

Remarks.—The black of the under side of the head extends around the neck and forms an incomplete black neck-collar which in the oldest males is but narrowly interrupted in the median line above. The sexes are colored alike; but one female (No. 14177), probably immature, has the black areas of the head and neck replaced by a dark gray color. The plumage otherwise differs from that of the adults only in having scarcely discernible fulvous edgings and wavy cross-bands to the feathers of the abdomen.

This species was abundant on Mount Malindang. Fifteen specimens were collected, ten of them males and five females.

Measurements (taken from fresh specimens by the author).—Three *adult males:* Length, 236–240; alar expanse, 335–342; wing, 110–113; tail, 108–117; culmen, 19–19.5; tarsus, 23–24; middle toe with its claw, 20–21. *Female* (No. 14177): Length, 230; alar expanse, 330; wing, 108; tail, 111; culmen, 19; tarsus, 23; middle toe with its claw, 21.

Centropus carpenteri, sp. nov.

Batan Island coucal.

Type.—No. 15190, collection of Edgar A. Mearns. Adult male. Shot by Mr. William Dorr Carpenter (for whom the species is named), in the foothills of Mount Irada, in the northern part of Batan Island, Philippine Islands, May 27, 1907.

Characters.—Similar to *Centropus mindorensis* (Steere), but larger, with less greenish reflections to the general black color.

Description of type (adult male.)—General color, black, with bluish and purplish, and some greenish luster to the metallic plumage; wings, purplish-brown. Bill, black; feet, plumbeous, claws, plumbeous-black.

Measurements.—Type (skin of adult male): Length, 440; wing, 166; tail, 278; culmen (chord), 32; depth of bill, 16; tarsus, 42; middle toe with its claw, 44.

Remarks.—This coucal is almost exactly like *Centropus mindorensis*, differing only in size and in the color of the metallic reflections to the black plumage. *Centropus mindorensis* is known only from Mindoro and the adjacent islet of Semirara. Following are its measurements, for comparison with those of *Centropus carpenteri:* Average of three adult male topotypes: Length, 398; wing, 153; tail, 238; culmen (chord) 29.2; depth of bill, 13.7; tarsus, 40; middle toe with its claw, 42.

Cyornis mindorensis sp. nov.

Mindoro red-breasted flycather.

Type.—No. 14519, Mearns collection. Adult male from the Alag River at 500 feet altitude, Mindoro, Philippine Islands, December 1, 1906.

Adult male.—Similar to *Cyornis philippinensis* Sharpe except that the blue of upper parts is slightly darked; and the under parts differ in having the abdomen and under tail-coverts orange instead of white. Specimen No. 4667, Bureau of Science collection, taken March 14, 1905, on the Rio Baco, Mindoro, by Messrs. McGregor, Celestino and Canton, has the following data written upon the label: "Bill black. Legs reddish flesh color, nails brown. Length, 5.9 inches."

Measurements (taken from skins).—Type (adult male): Length, 145; wing, 75; tail, 67; culmen, 14.5; bill from nostril, 11; tarsus, 19; middle toe with its

claw, 17. Adult male No. 4667, Bureau of Science collection: Length, 135; wing, 75; tail, 65; culmen, 14; bill from nostril, 10; tarsus, 19; middle toe with claw, 17.

Remarks.—All of the series of specimens of *Cyornis philippinensis* in the collection of the Bureau of Science have the crissum white, the Mindoro form being the only one, of all the islands represented, in which this part is orange.

Rhipidura hutchinsoni, sp. nov.

Mount Malindang fan-tailed flycatcher.

Type.—No. 52, collection of Robert Schroder. Adult male from Mount Bliss, Malindang group (altitude 5,750 feet), northwestern Mindanao, Philippine Islands, June 9, 1906.

Geographic distribution.—Peaks of Mount Malindang, northwestern Mindanao, from 4,000 to 9,000 feet.

Characters.—Similar to *Rhipidura nigrocinnamomea* Hartert, but larger, without white on chest, this being replaced by deep cinnamon; and the short supraorbital white stripes unite in front, forming a band across the forehead which encroaches upon the black which edges the bill. The cinnamon color of the under parts is darker in *hutchinsoni* than in *nigrocinnamomea.* In two adult males, taken May 20, the colors of the soft parts were noted as follows: Iris, dark brown; bill, black; feet, plumbeous, with claws nearly black.

Measurements.—An adult male (No. 14166, Mearns collection), measured in the flesh, presented the following dimensions: Length, 178; alar expanse, 233; wing, 77; tail, 90; culmen, 11.5; tarsus, 20; middle toe with its claw, 14. Skin measurements of the type (adult male) are as follows: Length, 155; wing, 78; tail, 95; culmen, 11.7; tarsus, 19.5. Skin measurements of adult female (No. 14167, Mearns collection): Length, 153; wing, 73; tail, 84; culmen, 11; tarsus, 20.

Material.—Five specimens from the type locality, where the species is abundant.

Hypsipetes batanensis, sp. nov.

Batan red-eared bulbul.

Type.—No. 15199, collection of Edgar A. Mearns. Adult male from Santo Domingo de Basco, Batan Island, Philippine Islands, May 27, 1907.

Characters.—Exactly like topotypes of *Hypsipetes fugensis* Grant, but larger, and with the forehead rufescent instead of cinereous.

Measurements.—Type (skin of *adult male*): Length, 262; wing, 130; tail, 127; culmen (chord), 28; bill from anterior margin of nostril, 20; tarsus, 26; midde toe with its claw (about), 27. Average of 3 *adult males* (including the type): Length, 264; wing, 128; tail, 127; culmen (chord), 28; bill from anterior margin of nostril, 26; middle toe with its claw (about), 27. Adult female: Length, 245; wing, 116; tail, 112; culmen (chord), 25; bill from anterior margin of nostril, 17.5; tarsus, 25; middle toe with its claw (about), 25.5.

Remarks.—Following, for comparison with *Hypsipetes batanensis,* are average measurements of three adult male topotypes of typical *Hypsipetes fugensis,* taken by the author on Fuga Island, May 30, 1907: Length, 261; wing, 123; tail, 125; culmen (chord), 25.2; bill from anterior margin of nostril, 17.1; tarsus, 21.3; middle toe with its claw (about), 23.3.

Merula malindangensis, sp. nov.

Mount Malindang blackbird.

Type.—No. 14134, Mearns collection. Adult male from Mount Malindang (Lebo Peak, 5,750 feet), northwestern Mindanao, Philippine Islands, May 15, 1906.

Geographic distribution.—Peaks of Mount Malindang, northwestern Mindanao, from 5,000 to 9,000 feet.

Characters.—Largest of the Philippine species of *Merula*. Breast and under side of neck, light drab-gray, a darker shade of this color extending to the throat and chin, and forming an indistinct collar around the hind neck; middle of abdomen and crissum, nearly white, mantle, back, rump and upper tail-coverts, light sooty-brown; wings and tail dark, sooty-brown.

Adult male.—Upper side of head, mantle, back, rump and upper tail-coverts light sooty-brown; flanks slightly paler and browner; wings and tail dark sooty-brown, more fuliginous on under surface; chest and under side of neck, light drab-gray, a darker shade of this color encircling the neck and extending to the chin and throat, where the feathers have dark shaft-streaks; sides of head pale sooty-brown; feathers of the median area, from chest to crissum, with broad, white edges and a dark central area inclosing a sagitiate white spot, giving a spotted appearance to the middle of the under surface of the body; crissum with this light area expanded and practically all white; under tail-coverts sooty-brown, longitudinally striped with white or pale buff.

Adult female.—Similar to the male, but slightly smaller, and dingier in color, with a slight rufescence on sides of lower breast and flanks.

Immature male (No. 14625, Mearns collection).—Sides of lower chest and flanks more strongly washed with raw umber than in adult females; chest and throat darker.

First plumage (male, No. 14266, Mearns collection).—Upper surface, dusky, washed with raw umber, especially on the head, neck, upper back, and wing-coverts; scapulars with pale rusty shaft-streaks, and some of the lesser wing-coverts edged with the same; under surface, sepia-brown strongly mixed with reddish-brown, and spotted with brownish-black, the rufescence covering the middle of the throat and much of the chest, the blackish cordate spots being confined to the tips and the rusty bands crossing the middle of the feathers; whitish median stripe distinct, but with pale rufescent edging to the feathers except on lower abdomen; under tail-coverts, sepia-brown with rusty edging and broad, white, median stripes.

In other specimens, taken at the same season, the molt was nearly finished, leaving a few feathers with rusty bands and black spots, and with a stronger rusty washing to the flanks than in adults.

Material.—Fourteen skins from the type locality.

Merula mayonensis, sp. nov.

Mount Mayon blackbird.

Type.—No. 15272, collection of Edgar A. Mearns. Adult male from Mount Mayon at 4,000 feet, Albay Province, Luzon, Philippine Islands, June 5, 1907.

Characters.—Pattern of coloration similar to that of *Merula thomassoni* Grant, but darker, with less contrast between the coloration of the head and that of the body. Smaller, with relatively stouter bill; prænal feathers not tipped with white.

Description of type (adult male).—Upper surfaces, except head and neck, all black; under surface of body black, perceptibly washed with brown on feather edges; head and neck, very dark brown, almost black on crown; entire under surface of wings and tail, dull black; under tail-coverts, black, with narrow median white stripes, involving the shafts. Iris, very dark brown; eyelids, bill, feet, and claws, all yellow. Female exactly like the male. A yunger male than the type differs only in having the feathers of the under side of the body edged with yellowish brown.

Measurements.—Type (skin of *adult male*): Length, 215; wing, 120; tail, 101; culmen (chord, measured from true base), 22; bill from anterior margin of nostril, 13; tarsus, 34; middle toe with its claw, 32.5.

Adult female: Length, 210; wing, 117; tail, 99; culmen, 20.5; bill from nostril, 13; tarsus, 33; middle toe with its claw, 32.

Remarks.—This form is very closely related to *Merula thomassoni* Grant, from the Province of Benguet, in the highlands of Luzon, but is smaller, 8 adult male topotypes averaging: Length, 225; wing, 121; tail, 102; culmen (chord), 23.2; bill from anterior margin of nostril, 14.7; tarsus, 33; middle toe with its claw (about), 32. As lateral measurements of the bill are the same as those of *Merula thomassoni,* and the length of the latter's bill is 1.7 millimeters greater than that of *Merula mayonensis,* the bill has the appearance of being stouter. The series of topotypes of *Merula thomassoni* with which comparison has been made was taken at the same season (May 8 to June 7).

Key to the Philippine species of Merula.

[Based on adult males.]

a. Wing less than 115 millimeters; sides of lower breast and flanks chestnut.
Merula mindorensis (Grant).

aa. Wing more than 115 millimeters; sides of lower breast and flanks not chestnut.

b. Chest, head and neck all round nearly uniform broccoli-brown (slightly darkest on crown).

c. Wing about 120 millimeters; body uniformly blackish; under tail-coverts longitudinally striped with white.

d. Larger; length, 225; wing, 121; bill from nostril, 14.7; body dark brown.
Merula thomassoni Seebohm.

dd. Smaller; length, 215; wing, 120; bill from nostril, 13; body practically black..... *Merula mayonensis,* new species.

cc. Wing less than 120 millimeters; body, including tail-coverts and crissum, uniformly clove-brown ..... *Merula kelleri* Mearns.

bb. Chest paler, contrasting strongly with the dark color of crown.

e. Smaller (wing, 124.5 millimeters; tail, 96.5 millimeters); chin, throat and chest pale sooty-brown, rather lighter on breast, flanks, and belly; median area of under surface dark, except at vent; under tail-coverts dark brown, with pale, whitish, brown tips.
Merula nigrorum (Grant).

ee. Larger (wing, 127 millimeters; tail, 115 millimeters); chin, throat, and chest pale drab-gray; flanks and breast similar in color to the upper surface of body; median area of under surface spotted with white anteriorly, all white posteriorly; under tail-coverts sooty-brown, with broad, longitudinal white stripes.
Merula malindangensis, new species.

Geocichla mindanensis, sp. nov.

Mindanao ground-thrush.

Type.—No. 14264, Mearns collection. Adult female from Mount Malindang at 6,500 feet, northwestern Mindanao, Philippine Islands, June 4, 1906.

Description of type (and only specimen).—Upper surface, including head, dark, ashen-gray, closely resembling the shade of the same parts in *Geocichla cinerea* Bourns and Worcester; feathers of the back, edged with black; scapulars with black spots occupying the tip of the web on the upper side; wing and tail-feathers, shaded with brown, and crossed by obsolete, wavy bars of darker; lores, eyelids, ear-coverts, and checks, cinereous, finely mixed with pale fawn color, the malar region being cross-banded with black and fawn, and the ear-coverts longitudinally striped with white; chin and throat, white, narrowly cross-banded with black, and bordered by black stripes; pectoral region, plain cinerous-ash, with pale shafts to the feathers; lower chest and flanks, black-and-white, each feather heavily

margined with jet black inclosing a sharply pointed white spot; middle of abdomen, white; crissum white, faintly washed with buff which is strongest on the lower tail-coverts; under side of wing-quills broadly white on inner border at base; edge of wing, white; axillars, white at base, broadly black at tip; under wing-coverts, black, tipped with white and pale cream color; upper wing-coverts without white spots.

Measurement of type (from skin).—Length, 230; wing, 125; tail, 78; culmen (chord), 25; bill from nostril, 19; tarsus, 32; middle toe with its claw, 30.

This species was occasionally seen as it darted through the mossy forest or alighted upon the ground; but it was so shy that only a single specimen was shot, although its loud, sweet song was frequently heard at morning and evening. It is closely related to *Geocichla andromeda* (Temminck), which Mr. Walter Goodfellow has recently (February, 1905) discovered at 8,000 feet on Mount Apo, Mindanao, as recorded by Mr. W. R. Ogilvie-Grant, in the Ibis for July, 1906, pages 468 and 477.

Zosterops halconensis, sp. nov.

Mount Halcon silver-eye.

Type.—No. 14480, Mearns collection. Adult male from Mount Halcon, Mindoro, Philippine Islands, at the altitude of 4,500 feet, November 14, 1906.

Remarks.—In the Bulletin of the British Ornithologists' Club, vol. XIV, page 13, October 30, 1903, Mr. Ernst Hartert separated the mountain *Zosterops* from Lepanto, Island of Luzon from the lowland *Zosterops meyeni* Bonaparte, under the name *Zosterops whiteheadi*, and, in the same paper (page 14) described the mountain form from 8,000 feet on Mount Apo, Mindanao, as *Zosterops whiteheadi vulcani*, observing that the form *vulcani* evidently represented *Zosterops whiteheadi whiteheadi* "on Mt. Apo, but probably older forms will also come as subspecies into this group, so that its name—that is, that of the species—may have to be altered eventually."

In addition to the forms *whiteheadi* and *vulcani*, which are represented by large series in my collections, the form here described was obtained in the Mindoro highlands.

Characters.—Sexes alike. Similar to *Zosterops vulcani*, but slightly larger. Wing, 56 against 55 millimeters; tail, 42–41; culmen 12–11.5. Color yellower, but without a longitudinal yellow stripe on middle of abdomen; sides more whitish gray; cheeks and ear-coverts paler and yellower, but the yellow confined to the chin and throat, not suffusing the upper chest; upper surfaces of a more golden green.

From *Zosterops whiteheadi* the Mindoro form is easily distinguished, when similar seasonal plumages are compared, by its greater size and more yellow coloration.

NEW LEPIDOPTERA OF THE PHILIPPINE ISLANDS.

By W. Schultze.

(*From the Entomological Section, Biological Laboratory, Bureau of Science, Manila, P. I.*)

Since the publication of Georg Semper's famous book, "Die Schmetterlinge der Philippinischen Inseln," little work has been done on Philippine Lepidoptera, but the fact remains that our lepidopterous fauna is fairly well known. This is mostly due to the efforts of the above-mentioned author.

Most of the new species published herein are from the Lake Lanao District, Mindanao, which, up to the present, has been but little explored.

This paper contains 11 new species together with 35 species which are new to these Islands.

RHOPHALOCERA.

LYCAENIDÆ.

RATHINDA, Moore, Lep. Ceyl. (1881), 1, 99.

Rathinda cuzneri, sp. nov. (Pl. I, fig. 1.)

♀ palpi black above, second joint white below. Wings dark-brown with a bronze sheen in certain lights. Fore-wing with a large white spot on the disc. Hind-wing; an oblong spot at the upper margin and tips of tails white. Underside; fore-wing as above but somewhat lighter, a white costal streak basally, and extending across the thorax; the large, white spot extends to inner margin. Hind-wing also with a white, basal band along costal margin and a small, subtriangular, post-medial, costal spot. Large, white, triangular, discal spot; its base parallel with the inner margin. Beyond the latter and below the post-medial costal spot, another subtriangular, post-medial one. The area between and around the white spots is brown, but along the outer and inner margin, ocherish. A series of small, black, submarginal spots toward upper angle, another black spot between tails 1 and 2 and another larger one between tails 2 and 3. A white streak between the latter spot and margin. Two black bands between the large, white, discal spot and inner margin, the one next to

the margin being the smaller, connected with the black spot between tails 2 and 3. All black spots and markings with metallic, blue streaks on their proximal margins. Tips of cilia and tails white.

♂: palpi white, third joint black above. Wings slightly darker than in ♀. Fore-wing with a few, light-blue scales between the discal spot and base.

Length of wing, ♂: defective.

Length of wing, ♀: 15 millimeters.

Lamao, Bataan, P. I.

Time of capture: August, 1907. (Harold Cuzner and W. Schultze, collectors.)

I take great pleasure in naming this very interesting species after Mr. Harold Cuzner who added the first specimen of this species to our collection.

Type ♂, No. 5498, and ♀, No. 7876, in Entomological collection, Bureau of Science, Manila, P. I.

HETEROCERA.

EUPTEROTIDÆ.

PSEUDOJANA, Hamps., Fauna Br. Ind., Moths (1892), 1, 48.

Pseudojana clemensi, sp. nov. (Pl. I, fig. 2.)

Palpi dark chestnut-brown; head, on top, grey-brown; collar and prothorax black; meso- and metathorax brownish-grey. Abdomen above, reddish-ocher, each segment with a marginal, crescent-shaped, black band; below, brownish-red and without the bands. Wings brownish-grey; fore-wing darker along costal margin and with a darker, indistinct, curved, subbasal line, an indistinct ante-medial, very distinct, dark-brown, medial and post-medial lines, nearly straight. Traces of a submarginal line, angled at vein IV. Hind-wing with a straight, oblique, medial line and an indistinct, post-medial band. General color of both wings towards outer margin more reddish. Underside, dark reddish-ocher; both wings with a red-brown, medial and a very distinct, dark-brown, post-medial line, latter curved, ♀: area on both wings between medial and post-medial lines greyish and beyond the latter diffuse brown, with some greyish patches on hind-wing along outer margin. Underside paler than in ♂, but red-brown along outer margin.

Length of wing, ♂: 63 millimeters.

Length of wing, ♀: 77 millimeters.

Camp Keithley, Lake Lanao, Mindanao, P. I.

Time of capture: April, May, 1907. (Rev. Joseph Clemens, U. S. A., collector.)

Types ♂ and ♀, No. 7557 in Entomological collection, Bureau of Science, Manila, P. I.

I take pleasure in naming this species in honor of Rev. Joseph Clemens, chaplain in the Fifteenth Infantry, United States Army, who has given a large number of insects to our collection, from the very interesting Lake Lanao District.

ZYGAENIDÆ.

ZYGAENINÆ.

PSEUDEUCHROMIA, gen. nov.

♀: antennæ bipectinate; palpi short and porrect. Mid and hind tibiæ, each with one pair of terminal spurs. Wings broad, apex rounded.

Fore-wing with veins IV and V from lower angle of the cell, vein VII stalked with VIII, latter with branch VIIIa: vein IX forming an areole with vein VIII. Hind-wing, vein V absent.

FIG. 1.

Pseudeuchromia catachroma gen. et sp. nov. (Pl. I, fig. 3.)

♀: head dark-brown; frons and collar yellow; thorax and abdomen dark-brown. A yellow spot on mesothorax, metathorax and first and second abdominal segments. Other segments with yellow, marginal bands. Legs brown with the coxæ yellow. Wings dark-brown. Fore-wing: a yellow basal, a large medial and a post-medial spot. Hind-wing with yellow basal, medial, small elongated post-medial spots; a very small marginal spot, at the inner margin near lower angle of the wing. The spots on both wings are elongated.

Length of wing, ♂: unknown.

Length of wing, ♀: 16 millimeters.

Camp Keithley, Lake Lanao, MINDANAO, P. I.

Time of capture: September, 1906. (Mrs. Mary Strong Clemens, collector.)

Type ♀, No. 6264, in Entomological collection, Bureau of Science, Manila, P. I.

THYRIDIDÆ.

VERNIFILIA, gen. nov.

♀ Palpi thickly scaled; reaching above vertex of head; antennæ simple. Legs with femora and tibiæ hairy, mid tibiæ with one pair of spurs, hind one with two pairs. Fore-wing with the costa nearly straight, slightly toward apex; acute.

Outer margin below apex somewhat excised. Vein V from lower angle and veins VII, VIII, IX from close to upper angle of the cell; vein IX forked with vein X. Hind-wing, outer margin evenly rounded, veins IV, V, VI from close to lower angle and vein VII from the upper angle of the cell. Thorax and abdomen rather stout. Fig. 2.

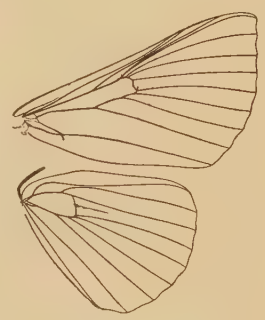

FIG. 2.

Vernifilia hyalipuncta, gen. et sp. nov. (Pl. I, fig. 4.)

♂ Head red-brown; thorax, abdomen and wings above, ocherish-red, latter somewhat lighter basally and with numerous fine dark striæ all over. Fore-wing with a row of four medial, semihyaline spots of which two are between veins I and II and the others between II–III and III–IV. The second spot from behind double. Marginal line, dark-brown, cilia grey. Hind-wing; cilia, interior half dark-brown, exterior half white. Underside of both wings darker, the striæ longer and more pronounced; traces of a medial, broad, greyish band. Fore-wing with a large, dark-brown spot just below the apex on outer margin. Abdomen below, greyish; fore femur and tibia dark-brown, others above, greyish, below ocherish. Tarsi above dark-brown; below ocherish with stripes of the same color above.

♀ with the striæ arranged in more definite lines.

Length of wing, ♂: 15 millimeters.

Length of wing, ♀: 16 millimeters.

Camp Keithley, Lake Lanao, MINDANAO, P. I.

Time of capture: March and May, 1907. (Rev. Joseph Clemens, United States Army, collector.)

Types Nos., ♂ 7562, and ♀ 7380, in Entomological collection, Bureau of Science, Manila, P. I.

This new genus should be placed before Dysodia Clem., as given by Clemens and by Hampson.[1]

[1] Dysodia, Clemens, *Pr. Ac. Nat. Sci.*, Phila. (1860), 349. Dysodia Clemens, Hampson, *Fauna Br. Ind.*, Moths (1892), 1, 368.

NOCTUIDÆ.

Gonopterinæ.

CAPOTENA, Wlk., Cat. Lep. Het. Br. Mus. (1857), 11, 714.

Capotena spatulata sp. nov. (Pl. I, fig. 5.)

Head and thorax dark-olive-brown, abdomen above, lighter; below, whitish with some ocherish scales. Anal tuft ocherish. Fore-wing greyish-brown, suffused toward inner margin. A large, dark-olive-brown, spatulate, costal spot extending posterior to disc with a darker dot in its center and surrounded by a light-grey line. This spot extends from one-fourth to three-fourths length of costal margin and three-fourths width of wing from costa toward inner margin. A wavy, submarginal, brownish line, angled between veins III and IV. Hind-wing fuscous, lighter toward base. Underside fuscous; hind-wings lighter.

Length of wing, ♂: unknown.

Length of wing, ♀: 16.5 millimeters.

Manila, P. I.

Time of capture: 18 April, 1905. (W. Schultze, collector.)

Type ♀, No. 2755, in Entomological collection, Bureau of Science, Manila, P. I.

QUADRIFINÆ.

FODINA, Guen., Noct. (1852), 3, 274.

Fodina lanaoensis, sp. nov. (Pl. I, fig. 6.)

Head and collar red-brown, the space between antennæ and their base whitish. Thorax chestnut-brown with a pink band and brown tuft posterior to it, another brown tuft on first abdominal segment. Abdomen and legs orange suffused with pink. Fore-wing with a small, basal, brown area along costa, the color suffusing with pinkish-grey. This area is separate from a large, irregular, dark-brown patch on basal half and along two-thirds of inner margin, by a cream-colored line which surrounds the latter except along inner margin. A broad, greyish-pink, oblique, irregular band from middle of costa to lower outer angle. Another large, dark-brown, subtriangular, apical patch also surrounded except along the costal margin by a cream-colored line. The cilia dark-greyish-pink. Hind-wing orange with the apical area fuscous-brown. Underside, orange, fuscous toward outer margin.

Length of wing, ♂: 21 millimeters.

Length wing, ♀: unknown.

Camp Keithley, Lake Lanao, Mindanao, P. I.

Time of capture: 8 April, 1907. (Rev. Joseph Clemens, United States Army, collector.)

Type ♂, No. 7359, in Entomological collection, Bureau of Science, Manila, P. I.

HYPOPYRA, Guen., Noct. (1852), **2**, 198.

Hypopyra donata, sp. nov. (Pl. I, fig. 7.)

Antennæ red-brown; head and collar light-grey-brown; palpi, toward tip, black. Thorax and abdomen light-ocher, the latter with a lateral series of black dots near anal end. Legs greyish-ocher, femoro-tibial joint of posterior legs black; spurs with black, apical bands. Wings light-ocher, irrorated with black scales. Fore-wing with very indistinct, wavy, black, basal and antemedial and with traces of a medial line on costa; three oblique lines, dentated between veins II and V, from apex to middle of inner margin. Nearly straight, light, submarginal line, with darker edges, joining the oblique lines at apex. A marginal row of light and dark dots on the veins. Cilia greyish. Hind-wing with the antemedial line straight and distinct; a slightly curved, medial zigzag line and a straight postmedial line with darker edges, from the costal margin near the apex to posterior outer angle. Three marginal dots toward anterior outer angle and two at posterior angle. Underside with more black scales than above. Fore-wing with two indistinct, black dots in the cell; distinct, curved, medial, zigzag, line; indistinct, straight, submarginal line and marginal row of dots. Hind-wing with black spot in the cell, very distinct; curved, medial, zigzag line and indistinct submarginal line; marginal row of dots as above.

Length of wing, ♂: 35 millimeters.

Length of wing, ♀: unknown.

Camp Keithley, Lake Lanao, MINDANAO, P. I.

Time of capture: March, 1906. (Mrs. M. S. Clemens, collector.)

Type ♂, No. 6294, in Entomological collection, Bureau of Science, Manila, P. I.

FOCILLINÆ.

PSEUDAGLOSSA, Grote, Bull. Buffalo Soc. Nat. Sci. (1874), **2**, 47.

Pseudaglossa peregrina, sp. nov. (Pl. I, fig. 8.)

Antennæ and third joint of palpi ocher, other joints fuscous-brown, as are head, thorax, abdomen and fore-wing. Costa of fore-wing, with an ocherish streak for three-fourths of its length and around the shoulders. A black spot, with white center, at the end of the cell. Dark, wavy, postmedial and indistinct, whitish, submarginal lines. The outer area, beyond the postmedial line, slightly darker. A thin, ocherish, interrupted, marginal line; cilia alternately brown and ocher. One small, light spot near apex on costal margin. Hind-wing lighter than fore-wing, especially toward base. A darker and a lighter medial and traces of a postmedial line, near inner margin. Marginal line and cilia as on fore-wing. Below; fore-wing, light-grey, cell spot as above, traces of a postmedial line, a broad, submarginal band, darkest at costal margin and a pronounced ocherish apical spot. Hind-wing, ocherish-grey, toward

outer margin fuscous. Distinct waved antemedial, medial and postmedial bands and dark marginal line.

Length of wing, ♂: unknown.

Length of wing, ♀: 14 millimeters.

Camp Keithley, Lake Lanao, MINDANAO, P. I.

Time of capture: 11 May, 1907. (Rev. Joseph Clemens, United States Army, collector.)

Type ♀, No. 7556, in Entomological collection, Bureau of Science, Manila, P. I.

CATADA, Wlk., Cat. Lep. Het. Brit. Mus. (1858), **16**, 209.

Catada rubricaea, sp. nov. (Pl. I, fig. 9.)

Second joint of palpi brown with white spots, third joint and face white; face with a brown spot in center. Top of head and collar brown, outlined with white. Thorax and first abdominal segment ocher; others fuscous above, whitish below. Fore-wing reddish-ocher changing to fuscous along outer margin. A nearly straight, small, white, medial band with a thin dark-brown line, along its outer edge. Cilia fuscous with light ocherish interspaces. Hind-wing fuscous, the cilia light-ocher. Underside: fore-wing fuscous, lighter along the markin; traces of a postmedial band near costa, a few light spots along outer half of costa. Cilia as above. Hind-wing whitish with a fuscous spot at the end of cell and a wavy postmedial line.

Length of wing, ♂: 12 millimeters.

Length of wing, ♀: unknown.

Camp Keithley, Lake Lanao, MINDANAO, P. I.

Time of capture: 25 March, 1907. (Rev. Joseph Clemens, United States Army, collector.)

Type ♂, No. 7387, in Entomological collection, Bureau of Science, Manila, P. I.

GEOMETRIDÆ.

BOARMIINÆ.

MEDASINA, Moore, Lep. Ceyl. (1886), **3**, 408.

Medasina nigrivincula, sp. nov. (Pl. I, fig. 10.)

General color black-brown; tips of antennæ white. Fore-wing with subcircular, antemedial, white spot in the cell, another antemedial, white spot along inner margin; two postmedial, white spots, the one in the center of the outer half of the wing being the larger, the other on inner margin. Apical spot, smaller than spot in cell. Hind-wing with broad, white, curved antemedial and postmedial bands.

♂: fore-wing; the antemedial spot at inner margin larger than in ♀ and nearly connected with the one in the cell. The medial, white band on hind wing more excised exteriorly at middle.

Length of wing, ♂: 21.5 millimeters.

Length of wing, ♀: 29 millimeters.

Camp Keithley, Lake Lanao, MINDANAO, P. I.

Time of capture: March and April, 1907. (Mrs. Mary Strong Clemens, collector.)

Types, ♂, No. 6939 and ♀, 7368, in Entomological collection, Bureau of Science, Manila, P. I.

PYRALIDÆ.

GALLERIINÆ.

ACARA, Wlk., Cat. Lep. Het. Brit. Mus. (1863), **27**, 198.

Acara strata, sp. nov. (Pl. I, fig. 11.)

Head and thorax pale-buff; metathorax white. First and second abdominal segments, above, with a velvet-like, light-brown saddle, other segments buff, with a few scattered brown scales. A large anal tuft consisting of large, triangular, greyish shiny scales. Fore-wing pale-buff, a few brown scales scattered over entire surface. A very oblique line of indistinct dots from middle of inner margin to near apex. A marginal row of brown dots midway between the veins. Hind-wing pearly-white, with brown dots as on margin of fore-wing, but only from the middle to the apex. Underside pearly-white, the costal area of fore-and hind-wings with the same color as on fore-wing above. Each wing with a darker spot in the cell, traces of a postmedial line; the row of dots along outer margin the same as above.

Length of wing, ♂: unknown.

Length of wing, ♀: 31 millimeters.

Antipolo, RIZAL, P. I.

Time of capture: 30 May, 1907. (W. Schultze, collector.)

Type ♀, No. 7520, in Entomological collection, Bureau of Science, Manila, P. I.

LIST OF SPECIES OF LEPIDOPTERA NEW TO THE PHILIPPINES.

RHOPALOCERA.

LYCAENIDÆ.

DRUPADIA, Moore, Journ., A. S. B. (1884), **53**, pt. 2, 31.

Drupadia moorei.

Sithon moorei Distant, Ann. Mag. Nat. Hist. (1882), ser. 5, **10**, 246.

Drupadia moorei Dist., Rhop. Malay. (1882–86), 236, pl. xx, figs. 20–23.

Lamao, BATAAN, P. I.

Dec., 1906, Feb., 1907. (H. Cuzner and W. Schultze, collectors.)

Nos. 6437 and 7877 in Entomological collection, Bureau of Science, Manila, P. I.

PAPILIONIDÆ.

CHILASA, Moore, Lep. Ceyl. (1881), **1,** 153.

PAPILIO, Linn., Syst. Nat. (1767), **1,** 2, 744.

Papilio (Chilasa) idaeoides.

Papilio idaeoides Hewits., Exot. Butterflies, I. Ornith. and Pap. pl. I, fig. 2. Semper, Schm. d. Phil. **5,** 266.

Montalban, RIZAL, P. I.

10 Mar., 1906. (Charles S. Banks, collector.)

No. 5707 in Entomological collection, Bureau of Science, Manila, P. I.

This interesting species is known from Mindanao, but as Semper makes the statement that the most northerly locality where it is found is between the seventh and eighth degrees of latitude, I give the above data for one female.

Papilio brama.

Guerin, Rev. Zool. (1840), 43, taf. 1. figs. 3, 4. Dist., Rhop. Malay. 338.

Lamao, BATAAN, P. I.

Jan., 1907. (E. M. Ledyard, collector.)

No. 7700 in Entomological collection, Bureau of Science, Manila, P. I.

HETEROCERA.

SPHINGIDÆ.

OXYAMBULYX, Rothschild & Jordan, Rev. Lep. Fam. Sphing. (1903), 192.

Oxyambulyx semifervens var.

Basiana semifervens Wlk., Cat. Lep. Het. Br. M. (1864), **31,** 38.

Oxyambulyx semifervens Rothschild & Jordan, l. c. 207.

MANILA, P. I.

July, 1903. (Charles S. Banks, collector.)

No. 1332 in Entomological collection, Bureau of Science, Manila, P. I.

HIPPOTION, Hübn., Verz. Bek. Schm. (1822), 134.

Hippotion rafflesi.

Chaerocampa rafflesi Butl., Trans. Zool. Soc. Lond. (1877), **9,** 556, n. 14.

Hippotion rafflesi Rothschild & Jordan, l. c. 755.

MANILA, P. I.

3 Nov., 1904. (W. Schultze, collector.)

No. 699 in Entomological collection, Bureau of Science, Manila, P. I.

CECHENENA, Rothschild & Jordan, l. c. 799.

Cechenena helops.

Philampelus helops Wlk., Cat. Lep. Het. Br. M. (1856), **8,** 180.

Cechenena helops Rothschild & Jordan, l. c. 801.

MANILA, P. I.

5 Apr., 1906. (W. Schultze, collector.)

No. 5703 in Entomological collection, Bureau of Science, Manila, P. I.

MEGACORMA, Rothschild & Jordan, l. c. 15.

Megacorma obliqua.

Macrosila obliqua Wlk., Cat. Lep. Het. Br. M. (1856), **8,** 208.
Diludia obliqua Moore, Lep. Ceylon (1882), **2,** 4, pl. 74, fig. 2.
Megacorma obliqua Rothschild & Jordan, l. c. 15.
MANILA, P. I.
1903. (Rev. R. E. Brown, S. J., collector.)

CYPA, Walker, Cat. Lep. Het. Br. M. (1864), **31,** 41.

Cypa decolor.

Smerinthus decolor Wlk., l. c. (1856), **8,** 255.
Cypa decolor Rothschild & Jordan, l. c. 298.
MANILA, P. I.
4 Aug., 1906. (Charles S. Banks, collector.)
No. 5879 in Entomological collection, Bureau of Science, Manila, P. I.

NOTODONTIDÆ.

CERURA, Schrank, Fauna Boica (1802), **2,** 2 Abth. 155.

Cerura liturata.

Wlk., Cat. Lep. Het. Br. M. (1855), **5,** 988.
Harpyia kandyia Moore, Lep. Ceyl. **2,** 108, pl. 120, figs. *1* & 1a. larva and pupa.
Cerura liturata Hamps., Fauna Br. Ind., Moths (1892), **1,** 155.
MANILA, P. I.
Sept., 1905. (B. E. Ingersoll, collector.)
No. 4306 in Entomological collection, Bureau of Science, Manila, P. I.

LASIOCAMPIDÆ.

ESTIGENA, Moore, Lep. E. I. Co. (1859), 426.

Estigena paradalis.

Wlk., Cat. Lep. Het. Br. M. (1855), **6,** 1453.
Estigena nandina Moore, Lep. Ceyl. **2,** 149, pl. 142, figs. 1, 1a.
Estigena paradalis Hamps., Fauna Br. Ind., Moths (1892), **1,** 424.
Mount Pinatubo, ZAMBALES, 2,500 ft., and MANILA, P. I.
Apr. and July, 1907. (Charles S. Banks and W. Schultze, collectors.)
Nos. 7422 and 7708 in Entomological collection, Bureau of Science, Manila, P. I.

LYMANTRIIDÆ.

DASYCHIRA, Stephens, Ill. Brit. Ent., Haust. (1829), **2,** 58.

Dasychira thwaitesi.

Moore, Lep. Ceyl. **2,** 98, pl. 116, figs. 1, 1a (b. larva). Hamps., Fauna Br. Ind., Moths (1892), **1,** 449.
BOHOL; Camp Keithley, MINDANAO, P. I.
May, 1906; Apr., 1907. (A. Celestino and Rev. Joseph Clemens, United States Army, collectors.)
Nos. 6707 and 7404 in Entomological collection, Bureau of Science, Manila, P. I.

ARCTIIDÆ.

LITHOSIINÆ.

LITHOSIA Fabr., Ent. Syst. Suppl. (1798), 459.

Lithosia antica.

Wlk., Cat. Lep. Het. Br. M. (1854), **2**, 505. Hamps., Fauna Br. Ind., Moths (1894), **2**, 79.

Camp Keithley, MINDANAO, P. I.

Mar. and June, 1907. (Rev. Joseph Clemens, United States Army, collector.)

Nos. 7397 and 7569 in Entomological collection, Bureau of Science, Manila, P. I.

NYCTEOLINÆ.

EARIAS, Hübn., Verz. Bek. Schm. (1818), 395.

Earias chromataria.

Wlk., Cat. Lep. Het. Br. M. (1863), **27**, 204. Hamps., Fauna Br. Ind., Moths (1894), **2**, 133.

Maao, NEGROS OCC., P. I.

Feb., 1902. (Charles S. Banks, collector.)

No. 3529 in Entomological collection, Bureau of Science, Manila, P. I.

NOCTUIDÆ.

TRIFINÆ.

MAGUSA, Walker, Cat. Lep. Het. Br. M. (1857), **11**, 762.

Magusa tenebrosa.

Moore, Proc. Zool. Soc. Lond. (1867), 59.

Hamps., Fauna Br. Ind., Moths (1894), **2**, 226.

MANILA, P. I.

May, 1905. (W. Schultze, collector.)

No. 2918 in Entomological collection, Bureau of Science, Manila, P. I.

CARADRINA, Ochsenheimer, Eur. Schm. (1816), **4**, 80.

Caradrina quadripunctata.

Fabr., Syst. Ent., 594. Hamps., Fauna Br. Ind., Moths (1899), **2**, 260.

MANILA, P. I.

June, 1905. (W. Schultze, collector.)

No. 3088 in Entomological collection, Bureau of Science, Manila, P. I.

LEUCANIA, Ochsenheimer, Eur. Schm. **4**, 81.

Leucania decisissima.

Wlk., Cat. Lep. Het. Br. M. (1865), **32**, 624. Butl. Ill. Het. Br. M. **6**, pl. 109, fig. 6. Hamps., Fauna Br. Ind., Moths (1894), **2**, 269.

Camp Keithley, MINDANAO, P. I.

Sept., Oct., 1906. (Mrs. Mary S. Clemens, collector.)

No. 6940 in Entomological collection, Bureau of Science, Manila, P. I.

Leucania exempta.

Wlk., Cat. Lep. Het. Br. M. (1857), **11**, 710. Hamps., Fauna Br. Ind., Moths (1894), **2**, 273.

Manila; Bago, Negros Occ., P. I.

Dec., 1905; May, 1906. (Charles S. Banks, collector.)

Nos. 4781 and 6285 in Entomological collection, Bureau of Science, Manila, P. I.

LEOCYMA, Guen., Noct. (1852), **2**, 212.

Leocyma sericea.

Hamps., Ill. Het. Br. M. (1856), **9**, 92, pl. 161, fig. 7. Hamps. Fauna Br. Ind., Moths, (1894), **2**, 289.

Manila, P. I.

Sept., 1905. (Charles S. Banks, collector.)

No. 4457 in Entomological collection, Bureau of Science, Manila, P. I.

Palindiinæ.

CALLYNA, Guenee, Noct. (1852), **1**, 112.

Callyna costiplaga.

Moore, Lep. Ceyl. **3**, 100, pl. 156, fig. 10. Hamps., Fauna Br. Ind., Moths (1894), **2**, 357.

Manila, P. I.

Feb., 1902. (Charles S. Banks, collector.)

No. 7685 in Entomological collection, Bureau of Science, Manila, P. I.

BAORISA, Hewitson & Moore, Descr, New Ind. Lep. from Atkinson Coll. (1879), 133.

Baorisa hieroglyphica.

Moore, l. c. 133, pl. 4, fig. 14.

Ramadasa hieroglyphica Hamps., Fauna Br. Ind., Moths (1894), **2**, 358.

Manila, P. I.; Camp Keithley, Mindanao, P. I.

Apr., 1906; Mar., 1907. (M. Lindquist and Rev. Joseph Clemens, United States Army, collectors.)

Nos. 6224 and 7363 in Entomological collection, Bureau of Science, Manila, P. I.

Sarrothripinæ.

PLOTHEIA, Wlk., Cat. Lep. Het. Br. M. (1857), **13**, 1108.

Plotheia strigifera.

Moore, Lep. Ceyl. **3**, 103, pl. 158, figs. 3, 3a. Hamps., Fauna Br. Ind., Moths (1894), **2**, 370.

Manila, P. I.

Aug., 1905. (Charles S. Banks, collector.)

No. 3855 in Entomological collection, Bureau of Science, Manila, P. I.

STICTOPTERINÆ.

STICTOPTERA, Guenée, Noct. (1852), **3**, 51.

Stictoptera costata.

Moore, Lep. Ceyl. **3**, 123, pl. 159, fig. 8. Hamps, Fauna Br. Ind., Moths (1894), **2**, 403.

MANILA, P. I.

June, 1905. (Charles S. Bank, collector.)

No. 3181 in Entomological collection, Bureau of Science, Manila, P. I.

QUADRIFINÆ.

HYPOCALA Guenée, Noct. (1852), **3**, 73.

Hypocala deflorata.

Fabr., Ent. Syst 3, 472. Hamps., Fauna Br. Ind., Moths (1894), **2**, 453.

MANILA, P. I.

Nov., 1905. (Charles S. Banks, collector.)

No. 4676 in Entomological collection, Bureau of Science, Manila, P. I.

DELGAMMA, Moore, Lep. Ceyl. (1885), **3**, 168.

Delgamma pangonia.

Guen., Noct. **3**, 214. Hamps., Fauna Br. Ind., Moths (1894), **2**, 512.

MANILA, P. I. (Rev. R. E. Brown, S. J., collector.)

ACANTHOLIPES, Lederer, Noct. Eur. (1857), 198.

Acantholipes trajectus.

Wlk., Cat. Lep. Het. Br. M. **33**, 986. Hamps., Fauna Br. Ind., Moths (1894), **2**, 521.

MANILA, P. I.

Dec., 1905. (W. Schultze, collector.)

No. 4730 in Entomological collection, Bureau of Science, Manila, P. I.

OPHIDERES, Boisduval, Fauna Ent. Madag. (1834), 99.

Ophideres tyrannus.

Guenée, Noct. **3**, 110. Moore, Trans. Zool. Soc. Lond., **11**, 69, pl. 13, fig. 5. Hamps., Fauna Br. Ind., Moths (1894), **2**, 562.

MANILA, P. I.

Jan., 1906. (Charles S. Banks, collector.)

No. 4941 in Entomological collection, Bureau of Science, Manila, P. I.

DELTOIDINÆ.

SIMPLICIA, Guenée, Delt. et Pyr. (1854), 51.

Simplicia marginata.

Bocana marginata Moore, Descr, Lep. Atk., 195, pl. 6, fig. 19.

Simplicia marginata Hamps., Fauna Br. Ind., Moths (1895), **3**, 35.

Camp Keithley, MINDANAO, P. I.

Apr., 1907. (Rev. Joseph Clemens, United States Army, collector.)

No. 7563 in Entomological collection, Bureau of Science, Manila, P. I.

Hypeninæ.

MARAPANA, Moore, Lep. Ceyl. (1885), **3,** 227.

Marapana pulverata.

Guenée, Noct. **3,** 351. Hamps., Fauna Br. Ind., Moths (1895), **3,** 72.
Manila, P. I.
July, 1907. (W. Schultze, collector.)
No. 7711 in Entomological collection, Bureau of Science, Manila, P. I.

HYPENA, Schrank, Fauna Boica (1802), **2,** 2, 163.

Hypena biplagiata.

Butl., Ill., Het. **7,** 86, pl. 134, fig. 1. Hamps., Fauna Br. Ind., Moths (1895), **3,** 90.
Mailum, Bago, Negros Occ., P. I.
June, 1906. (Charles S. Banks, collector.)
No. 6283 in Entomological collection, Bureau of Science, Manila, P. I.

GEOMETRIDÆ.

Geometrinæ.

PSEUDOTERPNA, Hübn., Verz. Bek. Schm. (1818), 284.

Pseudoterpna ruginaria.

Hypochroma ruginaria Guenée, Phal. (1857), **1,** 278.
Pseudoterpna ruginaria Hamps., Fauna Br. Ind., Moths (1895), **3,** 472.
Manila, P. I.
1903. (Rev. R. E. Brown, S. J., collector.)

PYRALIDÆ.

Galleriinæ.

GALLERIA, Fabr., Ent. Syst. Suppl. (1798), 462.

Galleria mellonella.

Phalaena mellonella Linn., Syst. Nat. **10,** I, 537.
Galleria mellonella Hamps., Fauna Br. Ind., Moths (1896), **4,** 9.
Manila, P. I.
10 Jan., 1905. (W. Schultze and R. Clute, collectors.)
No. 2199 in Entomological collection, Bureau of Science, Manila, P. I.

Schoenobiinæ.

RAMILA, Moore, Proc. Zool. Soc. Lond. (1867), 667.

Ramila acciusalis.

Wlk., Cat. Lep. Het. Br. M., **19,** 977. Moore, Lep. Ceyl., **3,** pl. 184, fig. 5. Hamps., Fauna Br. Ind., Moths (1896), **4,** 42.
Mailum, Bago, Negros Occ., P. I.
June, 1906. (Charles S. Banks, collector.)
No. 6288 in Entomological collection, Bureau of Science, Manila, P. I.

HYDROCAMPINÆ.

TALANGA, Moore, Lep. Ceyl. (1885), **3,** 300.

Talanga sexpunctalis.

Moore, l. c. 301, pl. 181, fig. 13. Hamps., Fauna Br. Ind., Moths (1896), 4, 221.

MANILA, P. I.

Aug., 1907. (W. Schultze, collector.)

No. 7956 in Entomological collection, Bureau of Science, Manila, P. I.

DICHOCROCIINÆ.

GONIORHYNCHUS, Hamps., Fauna Br. Ind. Moths (1896), **4,** 322.

Goniorhynchus plumbeizonalis.

Hamps., l. c. 323.

MANILA, P. I.

Aug., 1905. (W. Schultze, collector.)

No. 4164 in entomological collection, Bureau of Science, Manila, P. I.

PYRAUSTINÆ.

REHIMENA, Wlk., Cat. Lep. Het. Br. M. (1865), **34,** 1492.

Rehimena phyrnealis.

Wlk., l. c. 1859, **18,** 630. Moore, Lep. Ceyl., **3,** 290, pl. 181, fig. 5. Hamps., Fauna Br. Ind., Moths (1896), **4,** 261.

MANILA, P. I.

Jan., 1907. (W. Schultze, collector.)

No. 6509 in Entomological collection, Bureau of Science, Manila, P. I.

MEROCTENA, Led., Wien. Ent. Monatsschr. (1863), 392.

Meroctena tullalis.

Wlk., Cat. Lep. Het. Br. M., 1859, **18,** 649. Hamps., Fauna Br. Ind., Moths (1896), **4,** 376.

MANILA, P. I.

Aug., 1905. (W. Schultze, collector.)

No. 4001 in Entomological collection, Bureau of Science, Manila, P. I.

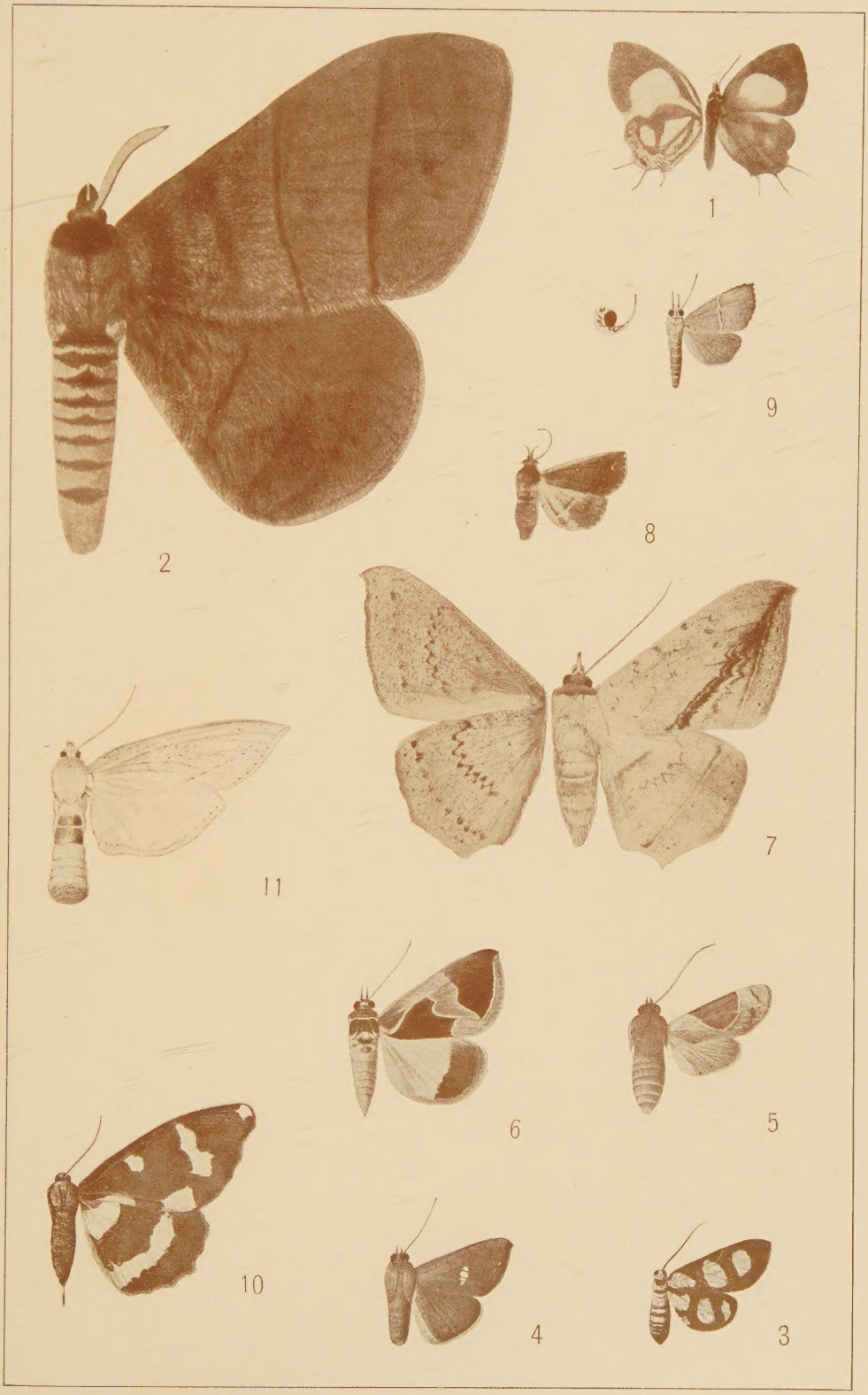

PLATE I.